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AUTHOR INDEX

Anderson, Harry E.	207	Kang, Jye	139
Anderson, Lynn R.	55	Kern, Frank E.	207
Arellano, Lourdes	155	Kerpelman, Larry C.	219
Arenson, Sidney J.	37	Kugelmass, Sol	253
Arvidson, Robert M.	133	La Fave, Lawrence	75
Bartz, Wayne R.	249	Lichtman, Cary M.	43
Bower, Robert K.	19	London, Perry	19
Brewer, Marilyn B.	13	Luchins, Abraham S.	97
Breznitz, Shlomo	253	Luchins, Edith H.	97
Bringmann, Wolfgang	267	McCarrey, Michael W.	69
Brislin, Richard W.	149	Meade, Robert D.	169
Brotman, Jayn	137	Melamed, Leslie	3
Burton, D.	199	Myers, David G.	37
Cansever, Gökçe	269	Napier, Herman S.	83
Chagnon, Gilles	69	Nichols, K. Ernest	135
Clare, Donald A.	271	Oskamp, Stuart	31
Cook, Charlotte	207	Paul, Donald	143
Crano, William D.	13	Posavac, Emil J.	227
Du Preez, Peter D.	265	Renner, John	189
Eisenberg, Shlomit	243	Rieder, Günther	267
Flores, Luis	155	Rule, Brendan G.	189
Furr, Richard	49	Ryckman, Richard M.	43
Gahagan, James P.	277	Sallery, Robert D. H.	273
Gardiner, Harry W.	281	Sechrest, Lee	155
Gardner, Robert C.	275	Senter, R. J.	137
Goldman, Morton	139	Shapiro, Jeffrey G.	181
Hackman, J. Richard	55	Sheikh, Anees A.	175, 275
Haer, John L.	123	Sherif, Muzafer	75
Hanson, David J.	89	Sinha, Jai B. P.	117, 129
Hare, A. Paul	163	Snider, James G.	135
Hare, Rachel, T.	163	Snider, John A., Jr.	135
Hicks, Jack M.	139	Suedfeld, Peter	259
Jacoby, Jacob	9	Tedeschi, James T.	277
Jaffee, Cabot L.	49	Triandis, Harry C.	227
Julian, James W.	43	Tsai, Loh Seng	83
Kahn, Marvin W.	113	Williams, Robert L.	107

TABLE OF CONTENTS

Race awareness in South African children	3
By LESLIE MELAMED	
Birth rank and pre-experimental anxiety	9
By JACOB JACOBY	
Attitude change as a function of discrepancy and source of influence	13
By MARILYNN B. BREWER AND WILLIAM D. CRANO	
Altruism, extraversion, and mental illness	19
By PERRY LONDON AND ROBERT K. BOWER	
Relationship of self-concepts to international attitudes	31
By STUART OSKAMP	
Stimulus factors in conformity	37
By DAVID G. MYERS AND SIDNEY J. ARENSON	
Internal-external control and the need to control	43
By JAMES W. JULIAN, CARY M. LICHTMAN, AND RICHARD M. RYCKMAN	
Number of reinforcements, conditioned leadership, and expectancy of reward	49
By CABOT L. JAFFEE AND RICHARD FURR	
The strength, relevance, and source of beliefs about an object in Fishbein's attitude theory	55
By J. RICHARD HACKMAN AND LYNN R. ANDERSON	
Intensity of assertion and the congruity principle	69
By MICHAEL W. MCCARREY AND GILLES CHAGNON	
Reference scale and placement of items with the own categories technique	75
By LAWRENCE LA FAVE AND MUZAHER SHERIF	
Social conditioning in the modification of dominance hierarchy in white rats	83
By LOH SENG TSAI AND HERMAN S. NAPIER	
Dogmatism and authoritarianism	89
By DAVID J. HANSON	
Motivation to tell the truth vs. social influences	97
By ABRAHAM S. LUCHINS AND EDITH H. LUCHINS	
Cognitive and affective components of southern Negro students' attitude toward academic integration	107
By ROBERT L. WILLIAMS	
Superior performance IQ of murderers as a function of overt act or diagnosis	113
By MARVIN W. KAHN	
A note on ethical risk hypothesis	117
By JAI B. P. SINHA	
Anger in relation to aggression in psychotherapy groups	123
By JOHN L. HAER	

CROSS-CULTURAL NOTES

The construct of dependence proneness	129
By JAI B. P. SINHA	
Performance of Canadian students on the Remote Associates Test . . .	133
By ROBERT M. ARVIDSON	
Active-passive social attitudes toward self and ideal-self in children in Canada and the United States	135
By JAMES G. SNIDER, JOHN A. SNIDER, JR., AND K. ERNEST NICHOLS	
Attitudes toward feminism in different national student groups . . .	137
By JAYN BROTMAN AND R. J. SENTER	

REPLICATIONS AND REFINEMENTS

Attitudes toward Negroes and stereotypes about Americans among Chinese students in Taiwan and the United States	139
By JACK M. HICKS, MORTON GOLDMAN, AND JYE KANG	
Reliability of ordinal scales derived by ego-involved judges	143
By DONALD PAULL	

BOOKS RECENTLY RECEIVED 145

Contact as a variable in intergroup interaction	149
By RICHARD W. BRISLIN	
Language and social interaction in a bilingual culture	155
By LEE SECHREST, LUIS FLORES, AND LOURDES ARELLANO	
Social correlates of autonomy for Nigerian university students	163
By RACHEL T. HARE AND A. PAUL HARE	
Psychological time in India and America	169
By ROBERT D. MEADE	
Stereotypy in interpersonal perception and intercorrelation between some atti- tude measures	175
By ANEES A. SHEIKH	
Variability in the communication of affect	181
By JEFFREY G. SHAPIRO	
Involvement and group effects on opinion change	189
By BRENDAN G. RULE AND JOHN RENNER	
Birth order and intelligence	199
By D. BURTON	
Sex, brain damage, and race effects in the progressive matrices with retarded populations	207
By HARRY E. ANDERSON, JR., FRANK E. KERN, AND CHARLOTTE COOK	
Status of frustrator as an inhibitor of horn-honking responses	213
By ANTHONY N. DOOB AND ALAN E. GROSS	
Personality and attitude correlates of political candidate preference . . .	219
By LARRY C. KERPELMAN	

Personality characteristics, race, and grades as determinants of interpersonal attitudes	227
BY EMIL J. POSAVAC AND HARRY C. TRIANDIS	
Ethnocentrism and the face of the stranger	243
BY SHLOMIT EISENBERG	
The influence of death upon hero-identification among psychiatric patients	249
BY WAYNE R. BARTZ	
The moral judgment of positive acts	253
BY SHLOMO BREZNITZ AND SOL KUGELMASS	
Anticipated and experienced stress in sensory deprivation as a function of orientation and ordinal position	259
BY PETER SUEDELFELD	

CROSS-CULTURAL NOTES

Social change and field dependence in South Africa	265
BY PETER D. DU PREEZ	
Stereotyped attitudes toward the aged in West Germany and the United States	267
BY WOLFGANG BRINGMANN AND GÜNTHER RIEDER	
The achievement motive in Turkish adolescents	269
BY GÖKÇE CANSEVER	
Language medium and responses to the semantic differential	271
BY DONALD A. CLARE	
Artistic expression and self-description with Arabs and Canadian students	273
BY ROBERT D. H. SALLERY	

REPLICATIONS AND REFINEMENTS

Comparative accuracy of Canadians' perception of compatriots and foreigners	275
BY ANEES A. SHEIKH AND ROBERT C. GARDNER	
Demographic factors in the communication of promises	277
BY JAMES P. GAHAGAN AND JAMES T. TEDESCHI	
Dominance-deference patterning in Thai students	281
BY HARRY W. GARDINER	

BOOKS RECENTLY RECEIVED	283
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6. The influence of puberty praecox upon mental growth—A. GESELL

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4. Responses of foetal guinea pigs prematurely delivered—G. T. AVERY
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1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, AND H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BUNCH
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5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLB
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VOLUME 37—January-June, 1948

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Genetic Psychology Monographs (continued)

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VOLUME 50—July-December, 1954

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VOLUME 52—July-December, 1955

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Genetic Psychology Monographs (continued)

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VOLUME 64—July-December, 1961

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VOLUME 65—January-June, 1962

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(Manuscripts are printed in the order of final acceptance)

Race awareness in South African children	3
By LESLIE MELAMED	
Birth rank and pre-experimental anxiety	9
By JACOB JACOBY	
Attitude change as a function of discrepancy and source of influence	13
By MARILYNN B. BREWER AND WILLIAM D. CRANO	
Altruism, extraversion, and mental illness	19
By PERRY LONDON AND ROBERT K. BOWER	
Relationship of self-concepts to international attitudes	31
By STUART OSKAMP	
Stimulus factors in conformity	37
By DAVID G. MYERS AND SIDNEY J. ARENSON	
Internal-external control and the need to control	43
By JAMES W. JULIAN, CARY M. LICHTMAN, AND RICHARD M. RYCKMAN	
(OVER)	

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Number of reinforcements, conditioned leadership, and expectancy of reward	49
By CABOT L. JAFFEE AND RICHARD FURR	
The strength, relevance, and source of beliefs about an object in Fishbein's attitude theory	55
By J. RICHARD HACKMAN AND LYNN R. ANDERSON	
Intensity of assertion and the congruity principle	69
By MICHAEL W. MCCARREY AND GILLES CHAGNON	
Reference scale and placement of items with the own categories technique	75
By LAWRENCE LA FAVE AND MUZAFAER SHERIF	
Social conditioning in the modification of dominance hierarchy in white rats	83
By LOH SENG TSAI AND HERMAN S. NAPIER	
Dogmatism and authoritarianism	89
By DAVID J. HANSON	
Motivation to tell the truth <i>vs.</i> social influences	97
By ABRAHAM S. LUCHINS AND EDITH H. LUCHINS	
Cognitive and affective components of southern Negro students' attitude toward academic integration	107
By ROBERT L. WILLIAMS	
Superior performance <i>IQ</i> of murderers as a function of overt act or diagnosis	113
By MARVIN W. KAHN	
A note on ethical risk hypothesis	117
By JAI B. P. SINHA	
Anger in relation to aggression in psychotherapy groups	123
By JOHN L. HAER	

CROSS-CULTURAL NOTES

The construct of dependence proneness	129
By JAI B. P. SINHA	
Performance of Canadian students on the Remote Associates Test	133
By ROBERT M. ARVIDSON	
Active-passive social attitudes toward self and ideal-self in children in Canada and the United States	135
By JAMES G. SNIDER, JOHN A. SNIDER, JR., AND K. ERNEST NICHOLS	
Attitudes toward feminism in different national student groups	137
By JAYN BROTMAN AND R. J. SENTER	

REPLICATIONS AND REFINEMENTS

Attitudes toward Negroes and stereotypes about Americans among Chinese students in Taiwan and the United States	139
By JACK M. HICKS, MORTON GOLDMAN, AND JYE KANG	
Reliability of ordinal scales derived by ego-involved judges	143
By DONALD PAULL	

BOOKS RECENTLY RECEIVED	145
-----------------------------------	-----

RACE AWARENESS IN SOUTH AFRICAN CHILDREN*¹

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LESLIE MELAMED

A. INTRODUCTION

Race awareness, as a purely social phenomenon, may be described as the utilization of specific physiognomic traits to distinguish between groups of people. Experimenters, such as Morland (12, 13), Helgerson (7), Clark and Clark (4, 5), Horowitz (8) and Horowitz (9), have measured such awareness in children with stimuli from which more than one physiognomic cue could be utilized to distinguish between various racial groups. However, it may well be that the age differences found in racial recognition in children may be an artifact of the test materials rather than something that would be valid outside the test situation. The older children may be able to utilize cues other than those used by younger children, while both may be able to distinguish between various racial groups in everyday life. Support for this view of the test materials is found in the work of Springer (15), who provided subjects with more cues than did the other experimenters by which to distinguish between stimuli. She found no differences in race awareness in children after the age of 4.

In South Africa there are, roughly speaking, four different racial groups: namely, the African (or Bantu or Negro), the white, the Indian, and the Colored. Other groups, such as the Chinese, are usually grouped together with the Indians under the heading of Asiatics. The four main groups are mainly distinguishable (at least by law) in terms of skin color. Taylor (16) has noted that this is not always an adequate means of distinguishing between people according to their legal racial classification. Other features which distinguish between the groups are the type of hair, the shape of the lips, and the shape of the nose. The latter three factors are mainly used to differentiate the Indians (who are Caucasoid) from the Africans (who are Negroid), all of whom have fairly dark skins.

In South Africa there have been only two studies of race awareness among white children to date. These are by Beitz (2) and Gregor and McPherson

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¹ Article based on a dissertation submitted in partial fulfillment for the degree of Bachelor of Science with honors, to the University of the Witwatersrand.

(6). Gregor and McPherson used the Clark Doll Test and reported that white subjects correctly identified with the white doll, but that they did not make any mention of age differences. Beitz reported increases with age in race awareness among white children between the ages of 3 and 10. Unfortunately, the pairs of black and white photographs she used were not comparable because the environment in which the two race groups was placed was not kept constant for each pair. This makes her findings somewhat suspect.

The present study was designed to investigate the relative values of some cues used in racial recognition in South Africa and to determine whether age differences exist in the utilization of these cues.

B. METHOD

1. *Subjects*

The subjects were 75 white middle-class boys and girls, relatively homogeneous with respect to religious background and socioeconomic status, from a predominantly English-speaking high status suburb of Johannesburg. Of these, 25 were 6 years old, 25 were 8 years old, and 25 were 10 years old. Peer interaction with the nonwhite groups was virtually unknown. There was, however, interaction with nonwhites on a master-servant relationship, since virtually all households in this area have at least two nonwhite servants.

2. *Procedure*

Two sets of stimulus cards and one set of response cards were used. A line drawing of an adult Caucasoid face, $5 \frac{3}{8} \times 6 \frac{1}{8}$ inches, was presented as the standard stimulus. The first stimulus set consisted of the standard and four others, each of which differed from the standard by one feature. These features were hair type, skin color, nose shape, and lip shape. The second stimulus set consisted of six line drawings of the same adult face. Each drawing differed with respect to two of the attributes named in the first set: e.g., one differed with respect to nose and hair types from the standard, while another differed with respect to color and hair. The six cards represented all possible combinations of deviations from the standard with respect to the four physiognomic features named in the first stimulus set. The response cards consisted of five symbols which the subjects found easily distinguishable from one another. The response cards consisted of a circle, a plus sign, an H, a triangle, and a square.

Subjects were required to learn paired association between the members of stimulus set one and the response cards. A new stimulus card was presented only when a correct response had been made by the subject. When all five stimulus cards had been presented, the procedure was repeated until the sub-

ject had correctly responded to two consecutive presentations of the whole of the first set of stimulus cards. Learning of the paired associates was such that, on each presentation of the stimulus set, correct pairing occurred once for each member who was verbally reinforced for responding correctly. After the subjects had learned the paired associates task, the members of stimulus set two were presented, and the responses to these noted without reinforcing any of the responses. The test situation was so controlled as to eliminate position bias, bias due to prior association between specific stimulus and response cards, and bias due to order of presentation of the stimulus cards.

The paired associates are thus used to establish the existence of a response hierarchy. The assumption of this technique is that the more dominant response made is revealed when a subject, who has previously learned distinctive responses to each of two stimuli presented separately and who is then presented with both stimuli simultaneously on the test trial, responds to one of those two stimuli rather than the other.

C. RESULTS

In the paired associates learning, the number of errors per stimulus was used as a measure of learning; and a two-way analysis of variance was performed to determine differences in regard to age and difficulty in the learning of stimuli.

From Table 1 it can be seen that there were marked age differences in the speed of learning. Differences were also found in the learning of specific stimuli. All the subjects appeared to learn the color discrimination first and the others later. With the second stimulus set the relative dominance of one cue over another could be measured, since there were two cues present in each stimulus card. No significant differences as determined by a χ^2 test were found in the response hierarchies of the three age groups. As a result, the responses could be pooled for the whole sample to determine the response hierarchies of the whole sample.

Table 2 indicates that skin color, when it was available, was the cue most utilized for discrimination. It was possible to generalize from the two choice data to a situation where a response could be made to one of three cues, by employing Luce's (11) choice axiom in a form modified by Atkinson *et al.* (1).

This states that the probability that stimulus number i (S_i) will be responded to from the total set of stimulus elements T is given by the product of the probability that some element of R (which is contained in T and contains within it S_i) is chosen when all of T is presented and the probability of choosing a particular S_i when R is presented.

In mathematical notation this reads $p(S_i/T) = p(R/T) \cdot p(S_i/R)$.

The proportion of responses in the two-choice situations were then used to calculate the proportions in Table 3.

By extrapolation of this method, the proportion of responses made to each of the stimuli when all four cues are present was calculated.

TABLE 1
TWO WAY ANALYSIS OF VARIANCE PERFORMED ON NUMBER OF ERRORS
MADE IN THE PAIRED ASSOCIATES LEARNING TASK

Source of variation	Sum of squares	Degrees of freedom	Mean squares
Stimuli	73918.4	4	18479.6
Age	76303.6	2	38151.8
Residual	15368.4	8	1921.05
Total	165590.4		

Note: $F_{4,8}$ = M.S. stimuli/M.S. residual = 9.02 (which is highly significant at .005 level: i.e., the differences between stimuli are highly significant).

$F_{2,8}$ = M.S. age/M.S. residual = 19.86 (which is highly significant at .005 level: i.e., there are great age differences).

TABLE 2
NUMBER OF RESPONSES MADE TO VARIOUS PHYSIOGNOMIC CUES WHEN
PRESENTED AS PART OF SECOND STIMULUS SET

Age group	Correct responses					Errors
	Hair	Mouth	Color	Nose	Total	
10 years	27	33	46	17	123	27
8 years	30	27	57	20	134	16
6 years	29	33	60	11	133	17
Total	86	93	163	48	390	60

TABLE 3
PROBABILITY OF RESPONSE TO A PARTICULAR CUE WHEN ALL THE DISCRIMINATORY
CUES WERE PRESENT (FOLLOWING LUCE'S CHOICE AXIOM)

Cue	Probability
Curly hair	.14
Thick lips	.16
Brown skin	.64
Large nose	.06

D. DISCUSSION

From the results it can be seen that color cues were the ones most frequently used to discriminate between people. There were, however, no differences in the response styles of the three age groups. This suggests that, by the age of 6, color had become, in this sample, the most important cue in discriminating between people.

Lott (10) has shown that color preferences could be developed through me-

diated generalization. This may well be what has happened in South Africa. Children are reinforced by parents and others in their home environment to distinguish between "white people" and "black people" with the nonwhite occupying a menial position, while the white person is dominant. By the age of 6 this cue is already firmly established as the most important one for differentiating between people. Utilization of other cues in the experiment is paralleled by what happens in the legal context in South Africa. It must, therefore, be assumed that already at the age of 6 a response hierarchy similar to the one existing in the adult world has been established.

Subjects also learned to use the color cue faster than they learned to use the other cues in the test situation. This is also to be expected, for Cieutat *et al.* (3) found that the more meaningful stimuli were more easily learned in paired associates learning, and most certainly color is a very meaningful cue in the South African context.

The age differences in the learning of the other cues could explain why other experimenters have found age differences in racial awareness in this age range. Morland (12, 13), Vaughan (17, 18), Ritchie (14), Beitz (2), and Horowitz (9) used black and white pictures in which color differences were not so obvious. This forced the subjects to utilize cues other than skin color in their racial recognition. In the nontest situation, skin color would still be the primary discriminant.

Possibly the subsidiary cues in racial recognition are learned and utilized as a function of the amount of contact which children have with members of other races. The more varied the contact, the more cues other than skin color that might be used to distinguish between people of different races.

Since the differentiation between people is primarily based on skin color and is learned by the age of 6, it is an extremely difficult task to change this discrimination, especially since it is reinforced by the segregation which exists in public amenities and in the schools.

E. SUMMARY

The relative values of four physiognomic features used to distinguish between racial groups in South Africa were examined.

It was found that skin color was the cue most frequently used to distinguish between people when the cues available were skin color, hair type, lip shape, and nose shape.

These findings parallel the legal situation in South Africa. This suggests that by the age of 6 white children have already learned the primary discrimination utilized in South African society.

Age differences found in the speed of learning of the cues other than skin color confirm the proposal that age differences in race awareness found by previous experimenters may merely be an artifact of the test situation.

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BIRTH RANK AND PRE-EXPERIMENTAL ANXIETY* 1

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A. INTRODUCTION

Schachter's monograph on *The Psychology of Affiliation* (11) has generated considerable research devoted to determining what effects ordinal birth position has upon such dependent variables as *n*-Affiliation, *n*-Achievement, alcoholism, conformity, and intellectual achievement [cf. (8, 13)]. Much of this work has involved measuring effects exhibited by the dependent variable as a function of experimentally induced anxiety or anxiety-related states.

Generally speaking, although some negative evidence exists (14), there does appear to be some degree of consistency in the ordinal birth position literature when emotional states are involved. At least in the American culture and especially in those studies that employ anxiety or anxiety-related states as the independent variable, differences between first and later borns on the dependent variable, typically, will not be manifested under control (i.e., no anxiety) conditions, but will be manifested under experimental (i.e., anxiety) conditions [cf. (1, 2, 3, 5, 6, 10, 11, 12, 15)]. However, if first and later borns differ with respect to the level of general anxiety which they bring to the experimental situation, it could be argued that the observed behavioral or response differences are a function of these pre-experimental anxiety differences rather than the experimental manipulations. Sampson (8, p. 196), in reviewing this aspect of the literature, concludes as follows:

If we put together these data . . . two studies indicate that the firstborns have higher anxiety than the later (11, 16); three indicate that the second born have higher anxiety than the first (7, 9, 14); and two indicate no difference (5, 14). On this basis, *it appears that there is no clear conclusion one may reach about the relationship between ordinal position and [initial level of] anxiety.* [Italics are the present author's.]

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B. METHOD

In the course of conducting a larger study to determine the effects of situational anxiety and ordinal birth position on dogmatism and authoritarianism (4), data relevant to the question of initial level of anxiety were collected. The subjects were 120 Michigan State University students enrolled in Introductory Psychology. This sample was divided equally into groups of males *vs.* females and first and only borns *vs.* later borns. The 30 subjects in each of the four combinations were randomly assigned to one of three experimental conditions (High-Anxiety; Mild-Anxiety; Controls). Prior to undergoing the manipulations, each subject was asked to respond to the following six-point anxiety item [adapted from (11, p. 31)]: "How nervous or uneasy do you feel about taking part in this experiment? Please answer by checking one of the following alternatives." There followed a six-point scale varying from "I feel extremely uneasy" (scored 6) to "I feel completely calm" (scored 1).

C. RESULTS

The means for the four subgroups ranged between 1.97 and 2.03, and the standard deviations from .61 to .94. No difference was found between the mean anxiety score obtained for the 60 first and only borns ($\bar{x} = 2.017$; $SD = .67$) and that obtained for the 60 later borns ($\bar{x} = 2.017$; $SD = .79$). Furthermore, an analysis of variance failed to find any difference, even approaching significance, for either the sex variable or for the interaction effects between sex and ordinal birth position. None of the obtained *F* values exceeded .23.

D. DISCUSSION

The results add further support to the contention that, when they first arrive for an experiment, first and only borns possess essentially the same degree of anxiety as do later borns. This would imply that the response differences observed and reported in the earlier studies may legitimately be considered to be a function of experimentally induced rather than pre-experimental differences in anxiety.

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ATTITUDE CHANGE AS A FUNCTION OF DISCREPANCY AND SOURCE OF INFLUENCE*

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A. INTRODUCTION

The functional relationship between the amount of advocated and obtained attitude change is apparently affected by the nature of the source of influence, the nature of the issue, and the range of advocated change. Most studies that have manipulated only source-subject discrepancy have obtained an increasing linear relation between discrepancy and change, with evidence that the relationship begins to decrease at the high extreme of advocated change (4, 5, 6, 8, 9). Manipulation of issue involvement (5, 7) or of source of influence (1, 2, 3) results in a curvilinear relation between discrepancy and change.

The interaction between source and discrepancy can be explained by dissonance theory, which holds that increasing discrepancy between a subject's own attitude position and that of a source of influence increases dissonance. Change of attitude in the advocated direction or disparagement of the source seems to be the major alternative mode of reducing dissonance in this situation. With a neutral source and moderate levels of discrepancy, attitude change would be the most probable mode of dissonance reduction employed; but at extreme levels of discrepancy, source disparagement would become more probable, resulting in a curvilinear relation between discrepancy and change. With a positive source, disparagement is less likely to occur except with very extreme discrepancies, producing an essentially linear relation between discrepancy and change. Disparagement of a negative source would be expected even at low levels of discrepancy, resulting in little attitude change regardless of amount of change advocated.

Previous studies of the relation between the nature of the source and levels of discrepancy as determinants of attitude change (1, 2, 3) have used only two types of sources—positive and neutral (or moderate)—and in all these studies the attitude position attributed to the source was presented in a persuasive communication read by the subjects. The present research was designed to extend the findings of the earlier studies by using three sources of influence—posi-

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tive, neutral, and negative—in a situation in which a specific attitude is attributed to the source without a persuasive communication. In such a situation, deprecation of the communication content is not available as a mode of dissonance reduction. Thus, it was predicted that attitude change, following attempted influence, would vary directly with the positiveness of the source and curvilinearly with the amount of discrepancy between the source's position and the subject's original attitude. The degree of curvilinearity in the relation between discrepancy and attitude change was predicted to vary according to the nature of the source, as described above.

B. METHOD

1. *Attitude Measures*

A pretest-posttest design was employed, with evaluative scales of the semantic differential used to measure attitude. The pretest measure included three evaluative bipolar scales (good-bad, wise-foolish, clean-dirty) and six other scales used as fillers. Nine different scales were used for the posttest measure of attitude, including three evaluative scales highly correlated with those used in the pretest (pleasant-unpleasant, successful-unsuccessful, beautiful-ugly). All measures were obtained in a single experimental session. Subjects first rated four concepts (urban renewal, U. S. space program, foreign aid, job corps) on the pretest semantic differential scales and then took part in an unrelated intermediate task involving a series of pair comparisons. In the final phase of the experiment, Ss rated the same four concepts on the second set of semantic differential scales. The cover page for the posttest booklets included the influence manipulation, involving an attitude rating at one of six levels of discrepancy from S's own attitude and attributed to one of the three sources.

2. *Procedure*

The second concept, U. S. space program, was used as the attitude object for this study because a pilot study indicated that college Ss have primarily positive attitudes toward this concept. While Ss undertook the intermediate judgment task, their pretest ratings of the selected concept were scored on the three evaluative scales, each scale being scored from -3 to $+3$. On the basis of their average ratings, Ss were assigned to one of three pretest-attitude categories: (a) total scores on the three scales from $+2$ to $+4$, (b) total scores from $+5$ to $+7$, or (c) total scores from $+8$ to $+9$. Equal numbers of Ss from each pretest category were assigned to each of the 18 experimental conditions.

The three sources of influence used were selected on the basis of credibility ratings of several possible sources in a pilot study. Sources included student

groups from two specified schools—one a well-known Eastern university (positive source) and the other a small two-year liberal arts college (negative source)—the third was a school identified only as “a midwestern university” (neutral source). The levels of discrepancy from *Ss*’ average evaluation were -1.5 , -2.0 , -2.5 , -3.0 , -3.5 , and -4.0 .

The discrepant attitude was introduced in the explanation and instructions on the posttest booklet cover page. Subjects were told that they were to rerate the same four concepts on a new set of scales which were a follow-up of the earlier set. They were informed that data collected on the original scales from college students across the country were already being analyzed by determining the modal rating on each scale item for each concept from students at every school surveyed. Subjects were then given the influence manipulation in the form of an example of the ratings of the U. S. space program on two scales (good-bad and wise-foolish) attributed to students from one of the schools comprising the three sources of influence. The reported ratings were manipulated so as to differ by varying degrees from *Ss*’ own evaluation scale scores. For instance, a *S* in pretest category (*b*), assigned to discrepancy condition -2.5 , would be given scale ratings of zero and -1 (averaging $-.5$, 2.5 scale values below 2.0); a *S* in pretest category (*a*), assigned to discrepancy condition -4.0 , would be given ratings of -3 on both scales (averaging 4.0 scale values below 1.0).

3. Subjects

Data were obtained from undergraduate students at Northwestern University in seven group sessions. Ten *Ss* were assigned to each of the 18 experimental conditions—five from pretest category (*b*), two from pretest category (*c*), and three from pretest category (*a*). Twelve *Ss* were eliminated because their pretest scores were negative. An eighth group of 30 *Ss* was used as a control group for change of attitude with no influence manipulation. These *Ss* completed the pretest, intermediate task, and then the posttest in a booklet with a cover sheet simply repeating the initial instructions for use of the rating scales.

C. RESULTS AND DISCUSSION

The measure of attitude change was the difference, for each *S*, between his pre- and posttest rating (total score on the three evaluative scales) of the concept, U. S. space program. Since *Ss* at different levels of original attitude were equally distributed across the 18 experimental treatments, any regression effects could not differentially affect the various conditions.

Comparing the change scores of the experimental *Ss* with those of the control

Ss revealed that influence manipulation had an effect on posttest evaluative ratings apart from the effect of changing scales. The overall mean change for the 180 experimental Ss, across the source-by-discrepancy conditions, was -1.83 , while that for the control group ($N = 30$) was $-.39$, the difference being significant at the .01 level.

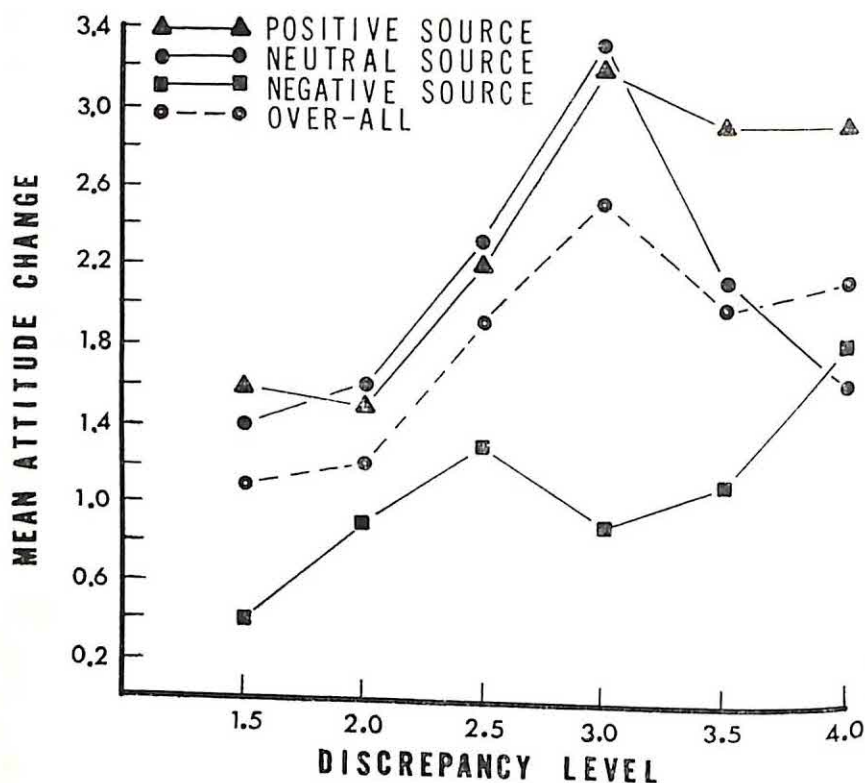


FIGURE 1
ATTITUDE CHANGE AS A FUNCTION OF DISCREPANCY AND SOURCE

A 3×6 analysis of variance was made of the attitude change data from the 18 experimental conditions. The main effects of source and discrepancy were significant ($p < .05$). As predicted, the positive source produced more change ($M = 5.4$) than the neutral source ($M = 5.0$), which produced more change than the negative source ($M = 4.0$). The overall effect of discrepancy is curvilinear (see Figure 1), with moderate levels of discrepancy producing most change.

Although the source-discrepancy interaction effect was not significant, Figure 1 reveals that the relation between discrepancy and attitude change was as

predicted for each of the source conditions. Individual correlational analyses support the predictions. The curve for the positive source is significantly linear ($r = .35$; $p < .01$), with no significant nonlinearity ($\eta = .41$). The neutral source curve is not significantly linear ($r = .09$) and the difference between the curvilinear component ($\eta = .37$) and the linear component approaches significance ($p < .10$). The curve for the negative source is neither significantly linear ($r = .18$) nor curvilinear ($\eta = .21$).

The difference in attitude change between the positive source and the negative source is evident at every level of discrepancy. However, the relation between the neutral source and the other two sources at low levels of discrepancy is markedly different from what it is at high levels. With discrepancies of -1.5 to -3.0 , the neutral source produces essentially the same amount of change as the positive source, but in the -4.0 discrepancy condition, neutral source Ss do not change more than Ss with the negative source. This finding supports the contention that at high levels of discrepancy, source disparagement replaces attitude change as the primary mode of dissonance reduction in the neutral source condition.

D. SUMMARY

The significant results of this study lead to the conclusion that the overall effect of source-subject discrepancy on attitude change is nonmonotonic, with decreasing attitude change at extreme levels of discrepancy, and that disparagement of the source of influence accounts for the curvilinear trend. There is some evidence that source disparagement is differentially used with different types of sources, but these results did not reach statistical significance. In general, the present data support the findings of previous studies on the relation between source and discrepancy as determinants of attitude change, despite the fact that influence was exerted without the use of persuasive communications.

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ALTRUISM, EXTRAVERSION, AND MENTAL ILLNESS*¹

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A. INTRODUCTION

In recent years, mental health and illness have been increasingly described in terms of "ego psychology" and "interpersonal processes." Central to both these terms is the idea that mental health depends largely on an individual's ability to negotiate a reasonably gratifying existence with an external reality whose most critical referents are significant others. This can be accomplished, presumably, without very much direct contact with them, so long as a person can maintain "self-esteem," which usually means the gratifying retention or recollection of positive reinforcements given him by other people. Enough self-esteem permits him to function adequately; a lack of it makes him too much the victim of anxiety, fear, or despair in the face of conflict and stress, and may thus precipitate severe dysfunction (mental illness).

If self-esteem is so critical to mental health, then the active solicitation of positive social reinforcement should be a helpful mechanism for promoting one's own mental well being, since self-esteem must ultimately depend on the favorable responses of other persons. One means of obtaining such reinforcements is through altruistic behavior. Altruism has been linked to self-esteem, to personal maturity, and presumably mental health, by several personality theorists; Allport (1) connects them explicitly and Rogers (7, 8) and Maslow (4) implicitly. It has also been discussed explicitly as a practical therapeutic device by Corsini and Rosenberg (2) and by Mowrer (5).

If altruism itself is particularly valuable for promoting self-esteem, it should be demonstrably separate from other behaviors, such as extraversion, which also serves to solicit positive social reinforcements. Esteem and extraversion have both been studied in connection with mental illness, but there have been no such studies of altruism. The present study reports an investigation of premorbid altruistic behavior in relation to extraversive personality in a sample of hos-

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pitalized mentally ill people. It was expected that a higher degree of mental health among them would be positively correlated with both altruistic behavior and extraversion, but more with altruism. It was also hypothesized that length of stay and altruistic behavior would be negatively correlated. The present study, therefore, served two main purposes: it examined the extent to which altruism and extraversion were related to each other and to mental illness, as well as the relationships between altruism, mental illness, and a number of other variables.

B. METHOD

1. *Subjects*

Twenty male and 20 female patients between the ages of 20 and 40 served as subjects in the main part of the study. They were asked to volunteer for an individually administered test of extraversion-introversion (the Myers-Briggs). Age was deliberately restricted so that the problem of older patients with possible senile complications was avoided. Other criteria used in the selection of the sample were (a) the patients must be nonpsychopathic, (b) they must be in sufficient contact with reality to participate in the study, (c) their diagnosis must not include such complicating factors as organicity, chronic alcoholism, or narcotics addiction, and (d) they must have a high school education or more.

Through the assistance of psychiatric records, ward personnel, and diagnostic instruments, such as the MMPI (particularly its Pd scale), the above criteria were applied to the screening of Ss who were drawn from both open and closed wards, as well as from the Day Treatment Center of the hospital. Virtually all of them were functional psychotics.

Three months after testing, the current status of the patients in the hospital was rechecked, and their placement at that time was used as our operational index of their mental health. Some had been discharged in the interim or were in the Day Treatment Center; these were classified in the high group. Others were in the open or closed wards and constituted the low group for comparison purposes.

2. *Instruments*

The measure of altruistic behavior was developed by the authors from a pilot study in which a 60-item inventory of various forms of altruism was administered to 20 mental patients from a subsample identical with the final sample on all criteria except age; five of the 20 were over 40 years old. This inventory was administered orally in individual interviews, and the responses were recorded. Items that appeared ambiguous in meaning or were confusing

to the patients or that received invariant responses in these interviews were eliminated from the inventory. The 20 remaining items from the pilot inventory were then used with a new sample of 40 patients. These items were arranged on five-point response scales ranging from "very much" to "very little" (or equivalent expression); they were also grouped into four subject matter categories of five items each. The favorable end of each scale was assigned a score of one and the unfavorable end a score of five. The items and categories used in the altruism inventory are

Family Category

1. Extent relatives want to help you.
2. Amount of responsibility you carried for siblings when you were younger and at home with them.
3. Extent your father helped others.
4. Extent your mother helped others.
5. Extent family members help each other.

Sociality Category (participation in groups prior to hospitalization)

6. Extent you belonged to school organizations when a student.
7. Frequency of attendance at school organizations when a student.
8. Extent joined community organizations (clubs, churches, charitable organizations, etc.).
9. Frequency of attendance at community organizations.
10. Frequency of serving as a group officer.

Charitableness Category (before hospitalization)

11. Extent contributed to charitable organizations.
12. Extent contributed during holidays.
13. Extent visited sick and disabled.
14. Degree candy, cigarettes, cookies, etc., shared with others.
15. Extent to which money given to those asking money for "cup of coffee," etc.

Responsibility Category

16. Extent you believe most people can get along by themselves.
17. Degree to which most people are fundamentally responsible.
18. Extent to which people should be willing to accept help if in difficulty.
19. Extent to which you should take responsibility for yourself.
20. Extent a person should help and feel responsible for others (both family and nonfamily).

In addition to the Altruism Inventory, the Extraversion-Introversion Scale of the Myers-Briggs Type Indicator, Form F (6), was used to measure the degree of extraversion or introversion of each subject in the sample. As a measure of the extrovert's main interests in the outer world of people and things

and the introvert's in the inner world of concepts and ideas, this scale behaves in a virtually identical fashion for males and females. The data from both of these instruments were programmed for computer analysis.

3. Procedure

a. *Extravert-Introvert Indicator.* The administration of the Indicator was conducted or supervised by the junior author in ward or Day Treatment Center offices of the hospital. The subject was asked several days before testing if he would be willing to cooperate in a research project which involved testing and tape recording of the responses. The E-I Scale of the Myers-Briggs Type Indicator was administered first, with most of the subjects completing the 166-item test in one sitting although two required additional time on a following day.

b. *Altruism Inventory.* Several days after the extraversion test had been taken, the patient was scheduled for the Altruism Inventory. When he arrived at the office, he was once again informed of the research nature of the project and of the confidentiality attached to it. The inventory took about 30 minutes and was conducted by the junior author who read the items orally to each patient, providing explanations when needed, and placing a typewritten scale directly in front of the patient for him to use throughout the test. Occasionally, a patient would ask a question which required further elaboration by the interviewer. For example, he would give the Red Cross, the Community Chest, churches, Heart Fund, Campfire Girls, and Boy Scouts as illustrations under "charitable organizations."

c. *Status check.* Approximately three months after the administration of the Inventory and Indicator, the hospital status of the 40 subjects was checked. Many were still in the wards and Day Treatment Center, but others had been discharged or given a lengthy leave of absence prior to expected discharge. With this information, it was possible to establish a high and a low "mental health" group, the high group consisting of those who were permitted to return home either on a partial or full-time basis and the low group consisting of those still receiving continuous care at the hospital.

d. *Reliability of instruments.* The reliability of the Myers-Briggs Indicator is known to be satisfactorily high (9), so the reliability of ratings of the Altruism Inventory alone was assessed in the present study. Subsamples of 14 of the 40 sets of patient responses were selected at random, and the tape recordings of these patients' sessions were presented to two judges, who independently scored the tapes on a form similar to that used by the examiner in the original testing

session. The rank order of category scores for each of the 14 subjects was correlated between the two judges, and their average rankings were then correlated against those of the examiner. Correlations of judges with each other for the four categories respectively were Family, .99; Sociality, .79; Charitableness, .95; Responsibility, .99. Average of the two judges with the examiner for these same categories yielded respective rank-order correlations of .75, .75, .80, and .99.

C. RESULTS

Biserial and Pearson product-moment correlations, as appropriate, were computed for the 40 variables involved in the study, including the 20 items of the

TABLE 1
INTERCORRELATIONS BETWEEN DEGREE OF MENTAL ILLNESS, LENGTH OF HOSPITAL STAY,
CHARITABLENESS, RESPONSIBILITY, AND EXTRAVERSION

Measure	Mental status (Hi-Lo) (Biserial)	Length of stay (Pearson r)
Charitableness (before hospitalization)	.45*	.31 ^a
Contributed to charitable organizations	.23	.22
Contributed during holidays	.20	.22
Visited sick or disabled	.18	.32 ^a
Shared candy, cigarettes, etc.	.62**	.18
Money given for cup of coffee, etc.	.32	.06
Responsibility	.39*	.01
People can get along by themselves	.19	-.33 ^a
People are responsible	-.04	.05
People should accept help	.51**	.17
Feeling of responsibility for self	.22	.02
Feeling of responsibility for others	.30	.14
Extraversion	-.06	.14

* $p = .05$ (with $r = .39$)

** $p = .01$ (with $r = .51$).

^a $p = .05$ (with $r = .30$).

altruism inventory and such informational data as sex, educational level, extraversion, length of stay, and voluntary or nonvoluntary admission basis to the hospital.

Table 1 presents the relationships of charitableness and responsibility to mental health status and the length of hospital stay. Evidently, the greater the degree of charitableness prior to hospitalization, the shorter the hospital stay, and the higher the degree of mental health which the patient manifests three months later. Similarly, visiting the sick is positively related to short hospitalization, and sharing behavior to high mental health.

One's sense of responsibility in general, moreover, is positively related to mental health status, as is the particular idea that people should accept help from others. In this connection, it is of particular interest that the notion that people can get along by themselves is inversely related to length of hospital stay. In other words, those willing to accept help and *not* insisting that people be self-reliant spend less time hospitalized than do others.

Table 2 is concerned with relationships of charitableness, responsibility, and family to extraversion and sociality (community or group-mindedness). The authors found that a high level of extraversion does not necessarily denote a high degree of charitableness, but tends to be somewhat more related to the sense of responsibility. It was significantly correlated with only one item of charitableness, contributions during holidays, but was significantly related to two items in the responsibility category and almost significantly related to the total category score. There are apparently no significant differences whatsoever in degree of giving between introvert and extravert groups. The data seem to speak rather positively, however, to the perceived relationship between the family of a subject and his degree of extraversion. Extraversion seems to be related to his perceptions of the attitudes of the *entire* family rather than to his perception of the parents only. If the subject perceives his family as wanting to help him and sees the members as helping each other, then extraversion is significantly present.

Sociality was found not to correlate highly with charitableness, except for those individuals who attend community organizations regularly, in which case we find item correlations of significance. But mere membership in such groups and the possibility that one has held offices in them does not guarantee a charitable perspective, contrary to what many persons believe. The subject appears to take a greater interest in school and community organizations, moreover, if he feels that his family wants to provide him with help. Conversely, without the concept of a supportive family relationship, it is doubtful that these subjects would join any community or educational groups (see Sociality correlated with "relatives wanting to help").

Relationships of the charitableness and responsibility categories to sex and educational level are reported in Table 3. As one might expect, the data revealed that women are more charitable than men and that men have a greater tendency than women to feel that people can get along by themselves, which may explain, in part, their lower degree of charitableness. It was also noted that subjects with a higher educational level (two or more years of college) tended to reveal a more general sense of responsibility than those with only a

TABLE 2
RELATIONSHIP OF FAMILY, CHARITABLENESS, AND RESPONSIBILITY TO EXTRAVERSION AND SOCIALITY

Measure	Extra- version	Cat. total	Sociality				Officer of org.
			School orgs.		Comm. orgs.		
			Belong	Attend	Belong	Attend	
Family							
Relatives want to help subject	-.11	.29	.33*	.22	.14	-.08	.29
Responsibility to care for siblings	-.31*	.44**	.36*	.33*	.34*	-.01	.36*
Father helped others	.17	.13	.14	.12	-.09	.10	.18
Mother helped others	-.04	.10	.15	-.08	.18	.05	-.02
Family members help each other	.16	.13	.27	.09	-.04	-.10	.21
	-.34*	.00	-.01	.13	.04	-.29	.05
Charitableness (before hospitalization)	.11	—	.08	-.03	.15	.38*	.03
Contributed to charitable organizations	.24	.07	.00	-.07	.25	.28	-.16
Contributed during holidays	.32*	.20	.07	.10	.16	.46**	-.06
Visited sick or disabled	-.14	.05	.05	.06	.08	-.05	.05
Shared candy, cigarettes, etc.	-.18	-.02	.10	-.15	.06	-.01	.21
Money given for cup of coffee, etc.	.12	.16	.05	-.04	.05	.50**	.07
Responsibility							
People can get along by themselves	-.28	.36*	.34*	.39*	.07	-.09	.32*
People are responsible	-.32	.26	.14	.36*	-.03	.03	.30
People should accept help	-.33*	.25	.14	.26	.23	.07	.00
Feeling of responsibility for self	-.18	.13	.17	.22	.17	-.20	.08
Feeling of responsibility for others	-.02	.14	.23	.20	-.15	-.16	.17
	-.07	.23	.27	.13	.06	-.12	.31*

* $p .05$ (with $r = .30$).

** $p .01$ (with $r = .39$).

high school education, but somewhat surprisingly, the relationship of education to charitableness was nonsignificant.

In Table 4, the total scores in the Responsibility and Family categories of the Altruism Inventory were correlated and found to be statistically significant. Especially noteworthy, also, were the respective correlations of .43 and .39 between the items "Father helps others" and "Mother helps others" and the subject's total Charitableness. Emulation of parents seems similarly to ac-

TABLE 3
CHARITABLENESS AND RESPONSIBILITY INTERCORRELATED WITH SEX AND EDUCATION

Measure	Sex	Education
Charitableness (before hospitalization)	-.42**	.14
Contributed to charitable organizations	-.33*	.22
Contributed during holidays	-.25	.15
Visited sick or disabled	-.10	-.16
Shared candy, cigarettes, etc.	-.22	.05
Money given for cup of coffee, etc.	-.41**	.21
Responsibility		
People can get along by themselves	.26	-.33*
People are responsible	.30*	-.09
People should accept help	.20	-.28
Feeling of responsibility for self	.11	-.15
Feeling of responsibility for others	-.06	-.25
	.24	-.26

* $p .05$ (with $r = .30$).

** $p .01$ (with $r = .39$).

count for the subject's sense of responsibility for others more consistently than any other item of family attitudes and behavior, except that of other relatives' perceived willingness to help.

The intercorrelations of Table 5 provide some evidence that a sense of responsibility alone is not significantly related to charitable or altruistic behavior (with the exception of visiting the sick or disabled), but that the parents and family, in general, appear to be of most importance in relation to it.

D. DISCUSSION

Those who have served on state hospital psychiatric teams have long been familiar with the fact that, in such institutions, patients who are married, voluntary, and of nonminority backgrounds have a greater likelihood of early and permanent release than those who are not so identified. It is suggested, as a result of this study, that the presence of strong altruistic tendencies in a patient is also a helpful criterion for predicting his length of stay. For therapists who may follow Kaplan (3) in grouping patients according to their potential for improvement, information relevant to their altruistic behavior may be of addi-

TABLE 4
RELATIONSHIP OF FAMILY TO CHARITABLENESS AND RESPONSIBILITY

Measure	Family				
	Relatives help	Sibling care	Father's help	Mother's help	Family helps each other
Charitableness (before hospitalization)	-.03	.29	.43**	.39*	.08
Contributed to charitable organizations	-.01	.07	.43**	.53**	.01
Contributed during holidays	-.17	.38*	.11	.25	-.17
Visited sick or disabled	.23	.25	.29	.24	.20
Shared candy, cigarettes, etc.	-.01	.12	.36*	.22	.01
Money given for cup of coffee, etc.	-.16	.10	.20	.05	-.27
Responsibility	.38*	.13	.09	.27	.24
People can get along by themselves	.10	.01	-.22	-.04	.08
People are responsible	.36*	-.13	.10	.02	.18
People should accept help	.27	-.10	.25	.09	.19
Feeling of responsibility for self	.14	.24	-.16	.28	.26
Feeling of responsibility for others	.37*	.25	.30*	.43**	.16
					.29
					.55**
					.40**
					-.02
					.18
					.24
					.25
					-.03
					.37*
					.36*
					.18
					.45**
					.25
					.25
					-.03
					.40**
					-.02
					.18
					.24
					.29
					.55**

* $p .05$ (with $r = .30$).

** $p .01$ (with $r = .39$).

TABLE 5
RELATIONSHIP OF CHARITABLENESS TO RESPONSIBILITY

Measure	People get along by selves	People respon.	Responsibility		Respon. for others.	Categ. total
			People accept help	Respon. self		
Charitableness (before hospitalization)	-.10	-.06	.21	.12	.27	.16
Contributed to charitable organizations	-.20	-.05	-.07	-.06	.07	-.06
Contributed during holidays	-.11	-.13	-.06	.05	.19	.02
Visited sick or disabled	.03	.16	.14	.30	.40**	.35*
Shared candy, cigarettes, etc.	-.07	-.27	.37*	.12	.17	.10
Money given for cup of coffee, etc.	.02	-.01	.20	-.03	.05	.09

* p .05 (with $r = .30$).

** p .01 (with $r = .39$).

tional help in assigning them. Beyond this, it would appear that patients who believe that people should be willing to accept help when needed and do not take too rigid a view about people "being able to help themselves" are probably more open to offers of therapeutic assistance than those who think differently.

Extraversion as a characteristic was not predictive of altruistic or charitable behavior. Indeed, the only statistically significant correlation of extraversion and charitableness was a *low* extraversion score with a high level of giving during the holiday seasons. All other extraversion-charitable correlations were nonsignificant. Generally speaking, sociality and responsibility categories yielded disappointingly low correlations with charitableness. Belonging to community organizations and even holding offices in such groups did not relate significantly with charitableness, nor did attitudes of feeling responsible for one's self or for others. Similarly, persons with advanced education did not reveal any more charitable behavior than did those in the lower educational group. As might be expected, when charitableness was related to sex, women scored significantly higher than the men.

It would seem from the results of the study that individuals with a high degree of extraversion, responsibility, and sociality would still not necessarily be charitable in their behavior. This might be because they believe that people are generally responsible and can manage their own affairs without help, and therefore have less need for charitable assistance. Interestingly enough, the relationship is not significant between the subjects' own sense of responsibility and the sense of responsibility which they perceive other people having for themselves.

It is primarily when we come to the family and its relationships to the factors already discussed that we find significant correlations. It would appear that perceived family characteristics are even more predictive of charitableness or altruism than of extraversion, responsibility, and sociality. The perceived behavior of one's parents seems to be especially related to charitableness and responsibility, and the family *as a unit* to matters of extraversion and sociality. The results support the general notion that identification with parental modes may be a primary source of orientation towards interpersonal and ethical standards of behavior.

It must be remembered, however, for this as for all the results of this study, that correlational findings do not imply causal relationships. A further interest of the authors, therefore, but outside the scope of this present study will be to see whether induced changes in altruistic behavior during hospitalization would contribute significantly to improved mental health.

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RELATIONSHIP OF SELF-CONCEPTS TO INTERNATIONAL ATTITUDES*¹

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A. INTRODUCTION

There is considerable evidence that people's images of other nations and attitudes toward them are related to personality variables, such as feelings of security, aggressiveness, value systems, etc. (4). However, there have apparently been no studies relating international attitudes specifically to individuals' self-concepts. Evidence on this topic which became available as part of a larger study on international attitudes (3) is reported herein.

B. METHOD

Subjects (Ss) were 320 college students, comprising the total freshman class of a small California coeducational, liberal arts college. They were given a one-hour questionnaire during a required class on the history of Western civilization. Included in the questionnaire were 15 Semantic Differential concepts and 52 other attitudinal and personality variables.

The data reported here are for nine of the 15 Semantic Differential concepts (italicized in the following sequential list): *Dog, United States, My Ideal Self, Separation of Church and State, Soviet Russia (the U.S.S.R.), Capitalism, Supreme Court Decision Banning Prayer in Public Schools, Russian Communism, Authority, My True Self, Atheism, Socialism, Homosexuality, Mailman, Chinese Communism*. Instructions and format of presentation were standard (2). Each concept was rated on the same 12 scales in the same order, with the desirable end of the 12 scales systematically varied. The scales were those which had loaded highly on only one of the three factors (2): six scales on the Evaluative factor, and three each on Activity and Potency. In order of presentation, they were nice-awful, dull-sharp, fast-slow, brave-cowardly, beautiful-ugly, dirty-clean, small-large, weak-strong, active-passive, pleasant-unpleasant, profane-sacred, and bad-good.

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TABLE 1 (continued)

Variable	6			7			8			9		
	E	A	P	E	A	P	E	A	P	E	A	P
1. My Ideal Self	36 28 37	36 31 38	57 50 60	73 56 72	49 40 47	52 42 52	-15	—	—	—	—	—
Eval.												
Activ.												
Poten.												
2. My True Self	30 — 26	32 — 35	40 — 50	37 —22 58	27 — 37	58 — 56	—	—	—	—	—	—
Eval.												
Activ.												
Poten.												
3. Authority	37 22 33	29 24 35	41 18 46	47 — 43	30 — 30	56 44 62	—	—	—	—	—	—
Eval.												
Activ.												
Poten.												
4. United States	— 29 33	— 37 43	— 40 57	-43 35 46	-18 22 31	-27 24 34	-26	—	—	—	—	—
Eval.												
Activ.												
Poten.												
5. Soviet Russia	-20 — 22	— 18 35	— — 49	36 20 71	15 49 61	— 20 62	47 — —	25 40 —	24 25 27	36 21 —	21 36 26	26 22
Eval.												
Activ.												
Poten.												
6. Capitalism	— — —	48 — —	42 62 —	18 19 43	— 25 33	— 28 39	-26 -27 -15	—	—	—	—	—
Eval.												
Activ.												
Poten.												
7. Russian Communism	— — —	— — —	— — —	— — —	— — —	— — —	—	—	—	—	—	—
Eval.												
Activ.												
Poten.												
8. Chinese Communism	— — —	— — —	— — —	— — —	— — —	— — —	—	—	—	—	—	—
Eval.												
Activ.												
Poten.												
9. Socialism	— — —	— — —	— — —	— — —	— — —	— — —	—	—	—	—	—	—
Eval.												
Activ.												
Poten.												

Note: Decimals omitted, and r 's $< .15$ omitted for ease in reading. N s range from 301-308; $r \geq .15$ has $p < .01$.

C. RESULTS AND DISCUSSION

Pearson r 's for the three dimensions on each of the nine concepts are shown in Table 1. The N s for these correlations ranged from 301 to 308, and r 's $< .15$ (not significant at the .01 level) have been omitted for ease in reading. The most interesting relationships are those with much higher r 's (e.g., $\geq .30$), ranging as high as .75 and .85. These high r 's were nearly all among the first seven concepts in Table 1, including the personality variables; the last two concepts are included for contrast and for completeness of the political variables.

Among the first seven concepts there is evidence of a strong general factor: mostly positive r 's and only a very few high negative r 's. Even pairs of intuitively-opposing concepts, like United States and Soviet Russia, Capitalism and Russian Communism, had more positive than negative r 's. This finding, though surprising, does seem consistent with Scott's conclusion that there is "a widespread disposition either to like or to dislike foreign countries in general" (4, p. 72). Here that disposition seems even to extend consistently to attitudes toward one's own country.

Another surprising finding was that the concept My Ideal Self had more high correlations with the other concepts than did any other. Thus S s could not have just been uniformly describing their ideal in glowing terms, as might have been expected, for this would have produced zero-order correlations.

Four of the concepts (My True Self, Authority, United States, and Soviet Russia) had at least one dimension (usually the Activity dimension) that consistently failed to correlate with the other concepts although their other dimensions did correlate highly.

The concepts My True Self, United States, and Soviet Russia differed from the others in not having uniformly high r 's among the three dimensions *within* each concept. Perhaps this may be because they were the only real entities being rated and thus were known to the S s in more of their complexity, whereas the other concepts were abstract "isms" and thus could be rated consistently in line with the S s' ideal stereotypes of them.

Capitalism and Russian Communism nearly always correlated in the same direction with the other concepts, again demonstrating Scott's "consistent disposition to like or dislike" countries. Russian Communism had particularly high r 's and showed a consistent relationship to the Potency dimension on all six other concepts.

In contrast to the first seven concepts, Chinese Communism and Socialism

showed no high r 's with the first four concepts and only scattered and expected relationships with Russia, Russian Communism, and each other. This reveals that the S s were discriminating between concepts rather than rating them all in the same way, but it raises the question of why these two concepts were rated differently. Perhaps the answer may be that S s had less knowledge and so a less-differentiated picture of these concepts (the data were collected in 1963 before events in China had attracted so much worldwide attention). Carlson (1) has shown that unsophisticated or ignorant people have little structure to their social and political attitudes, and it seems likely that the same is true of concepts about which people are ignorant, with the result that S s may give essentially random judgments about them.

An explanation which might be offered for the high positive r 's between personality variables and political concepts is that of response bias: that is, S s might merely be rating all concepts in similar ways regardless of their content. However, the lack of significant results for Chinese Communism, Socialism, and other unreported variables refutes this hypothesis, as do the consistent low relationships found for some dimensions on several of the concepts. Instead of the response-bias interpretation, the results seem to support Scott's conclusion that there exists a "generalized optimism-pessimism variable that may color one's views of the world" (4, p. 89). In this case salient concepts in both the personal world and the international world were found to be closely related.

D. SUMMARY

A correlational study on questionnaire responses of 320 college freshmen showed a pattern of many high positive correlations between self-concept variables (particularly the ideal self), attitudes toward authority, and attitudes toward certain salient political concepts (such as Russian Communism or the United States). These rather surprising results cannot be explained by response bias. Instead they support the notion of a general variable of optimism-pessimism which affects people's views of their personal world, as well as of the international world.

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STIMULUS FACTORS IN CONFORMITY*¹

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A. INTRODUCTION

Investigators of conformity behavior have emphasized personality and social variables, while attending less to stimulus factors (*cf.*, 3, 5). Allen, in a recent review of situational factors in conformity concluded, "Systematic examination of the interaction of the nature of the task with other variables is lacking" (1, p. 169).

It has been proposed that the more familiar the subject is with the stimulus, the less he conforms to group pressure (7). To test this hypothesis, it is necessary to hold difficulty of the task constant. Difficulty can be defined by errors in judgment made by Ss not exposed to group pressure. One way of varying familiarity is to use sex-related items, on the assumption that females compared with males have had more exposure to certain objects (*e.g.*, bracelets).

In this experiment, male and female Ss were presented twice with a discrimination task involving the same stimuli. Familiarity was varied by introducing the stimulus with a masculine label on one presentation and a feminine label on the other presentation. Since the stimuli were identical on both presentations, the difficulty of the discrimination was assumed to be constant.

Two hypotheses were tested: (a) Males will conform more on stimuli with a feminine label than on stimuli with a masculine label, and females will conform more on stimuli with a masculine label than on stimuli with a feminine label. (b) Subjects exposed to judgments of males will conform more on stimuli with masculine labels than on stimuli with feminine labels, and Ss exposed to judgments of females will conform more on stimuli with feminine labels than on stimuli with masculine labels.

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² The first author is now at Hope College and the second author is at Syracuse University.

B. METHOD

The Ss were 176 introductory psychology students at the University of Iowa. Forty Ss (20 males and 20 females) rated items for masculinity-femininity, 40 Ss (20 males and 20 females) were in the control condition, and 96 Ss (48 males and 48 females) were in the experimental condition.

A size discrimination task was presented with a Kodak Carousel 800 slide projector. Twelve different stimuli were put on slides. Each slide contained a transparency developed from two photographs of a drawing. The average difference in sizes of the two reproductions was approximately 6 per cent. Six of these stimuli were introduced with a neutral label (e.g., chair). The remaining six stimuli were shown twice, introduced by a masculine label on one presentation and a feminine label on the other presentation. These presentations involved identical slides shown in different positions. For example, two disc-shaped objects were introduced as "bracelets" before one exposure and as "footballs" before the other exposure.

Forty Ss rated 34 potential labels along a masculine-feminine dimension on a nine-point scale. The mean rating of each of the 12 masculine and feminine labels selected for the experiment was significantly different in the expected direction from each of the six neutral labels ($p < .001$ by t tests).

Subjects were seated in front of a microphone and asked to listen to taped instructions which introduced a discrimination task on which the subject was to specify the larger of two identified objects by saying "right," "left," "top," or "bottom." The procedure for presenting the majority was as follows:

Now in order to make the situation as controlled as possible I have tape-recorded these instructions, the identifications of the objects, and will even tape-record everyone's answers. This will also give us a record to play back should we be uncertain of anyone's responses. I will identify when it's your turn to respond in this manner: if you're the first subject in this condition, speak your response into the mike after I say "subject number one." If you are the second subject, speak your response after I say "subject number two." The last person I will call for is the sixth subject.

Upon completion of the instructions *E* referred to his papers and informed *S* that he was subject number three.

Two voices composed the majority. Half of the female Ss and half of the male Ss heard a female majority and the other half of each group of Ss heard a male majority.

During the experiment the tape introduced stimuli by stating, "On the next slide you are asked to compare two ____." Stimuli were then exposed for a brief constant interval of approximately .3 seconds. Following the order used

by Asch (2), the majority gave correct answers on the six neutral trials and incorrect answers on the 12 sex-related trials. The first nine slides included three noncritical and six critical trials. The last nine slides included identical critical stimuli in the same order as those presented in the first half of the experiment, but in different positions and with the different labels. Half of the Ss in each of the sex of subject-sex of majority conditions received a given series of nine slides first.

Female and male control groups were run to obtain a base rate for errors. In place of hearing the taped answers of stimulated Ss, control Ss waited an equivalent length of time until the tape asked for "your decision."

C. RESULTS

The measure of conformity was the number of responses which Ss made that were in agreement with the incorrect judgments of the simulated majority. The mean number of conforming responses for each of the four experimental groups and for the two control groups are presented in Table 1.

TABLE 1
MEAN NUMBER OF CONFORMING RESPONSES AND STANDARD DEVIATIONS
FOR EACH OF SIX GROUPS

Condition	Stimulus label			
	Masculine		Feminine	
	Mean	SD	Mean	SD
<i>Experimental Ss</i>				
Males				
Male majority ($N = 24$)	1.58	1.53	1.29	1.31
Female majority ($N = 24$)	1.25	1.05	1.50	1.35
Combined	1.42		1.40	
Females				
Male majority ($N = 24$)	1.58	1.26	1.29	1.34
Female majority ($N = 24$)	1.29	1.06	1.17	1.49
Combined	1.44		1.23	
<i>Control Ss</i>				
Males ($N = 20$)	0.70	0.71	0.60	0.66
Females ($N = 20$)	0.25	0.43	0.35	0.57
Combined	0.48		0.48	

The mean number of conforming responses given by control Ss on the 12 critical trials was .95. The mean number of incorrect responses on critical slides given by experimental Ss was 2.74. The difference in means between experimental and control Ss of 1.79 was significant ($t = 5.75$, $df = 134$, $p < .001$), indicating that the exposure to majority judgments was successful in producing conformity.

The number of conforming responses of the four experimental groups was analyzed in a Type III Analysis of Variance (4), with sex of subject and sex of majority as between groups factors and stimulus label as a within group factor. The first hypothesis was that conformity would increase when Ss were unfamiliar with the stimuli. The prediction derived from this hypothesis was that there would be a significant sex of subject-stimulus label interaction. This term of the analysis of variance was not significant ($F = .44$, $df = 1,92$). The second hypothesis was that conformity would increase when the majority was familiar with the stimuli. This prediction, of a sex of majority-stimulus label interaction, was also not supported ($F = 1.59$, $df = 1,92$).

The data also allowed a convenient test of the hypothesis that conformity varies with the difficulty of the task. A product moment correlation coefficient of $+.80$ was obtained between difficulty of the six different critical slides, as determined by control Ss' errors, and number of conforming responses on those slides by experimental Ss. Ostensibly this reflects a relationship between difficulty and conformity. An attempt was made to estimate the extent to which this relationship may have been exaggerated by uninfluenced perceptual errors being scored as conforming responses. The number of conforming responses of experimental Ss was corrected by subtracting from it the expected number of errors for each item. "Expected errors" were defined by a weighting of the control group performance. For example, on the two presentations of critical slide 1, the 40 control Ss made six incorrect responses. For the 96 experimental Ss we would expect $6 \times 96/40 = 14.4$ error without the operation of social influence. To estimate the extent to which agreement with simulated Ss was due to social influence, 14.4 is subtracted from the total number of experimental errors for that slide (40) to arrive at the corrected conformity total of 25.6. The new correlation coefficient between difficulty and corrected conformity was $+.04$.

D. DISCUSSION

Contrary to the first hypothesis, sex of S and stimulus label did not interact to affect conformity significantly. The data also do not support the second hypothesis; sex of the majority and stimulus label did not combine to produce a significant effect. The effect of familiarity found in previous studies (*cf.*, 6, 7) may have been a function of other stimulus elements usually associated with familiarity, such as difficulty.

The small size of the majority may have mitigated the predicted effects. This was unlikely because the effect of the majority was large enough to result in a significant difference between experimental and control Ss.

If live confederates had been used instead of the simulated majority, the sex

of majority and sex appropriateness of the stimuli might have been more salient to the S. Mouton (6) also used a simulated majority and she, too, found no sex of majority-stimulus interaction, even though she did find a sex of subject-stimulus interaction.

It is possible that the familiarity ratings by the pretest subjects may have differed from those of the experimental subjects. What might be even more important is that, in the present experiment, familiarity was with the stimulus items or "object of the . . . behavior to be influenced" (7). There was no differential familiarity with the task itself. The task involved size discrimination; hence, experimental Ss, as well as control Ss, may have been unaffected by the familiarity dimension. A next step in evaluating the effect of familiarity upon conformity might, therefore, be to vary familiarity with the task itself, perhaps by an experimental manipulation, such as previous exposure. Task difficulty could be held constant by the use of an extremely easy task.

E. SUMMARY

This study investigated conformity to the incorrect judgments of a majority as a function of the S's and the majority's familiarity with the stimuli. The subjects and the majority were either male or female and the stimuli were given either masculine or feminine labels. Familiarity of the subjects or the majority with the stimuli did not significantly affect conformity. Further analysis suggested that the usual relationship between task difficulty and conformity may be partly due to increased perceptual errors on more difficult stimuli.

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INTERNAL-EXTERNAL CONTROL AND THE NEED TO CONTROL*¹

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A. INTRODUCTION

Phenomenal causality has interested psychologists for many years. Recently, Rotter (6) has discussed the importance of perceived causality or control in determining individual behavior. A number of studies have now shown that the locus of control significantly influences task performance. [For a thorough discussion of this work, see Rotter, Seeman, and Liverant (9); Lefcourt (4); or Rotter (7).]

In addition to the manipulation of the perceived locus of control, Phares (5) and James (3) developed a scale to measure individual differences in a generalized tendency to perceive the locus of control as internal or external to the individual. People who are high on the internal pole of this dimension (internals) have been described as seeing events as being under their own control, a function of their skills, or abilities. Individuals high on the external pole (externals) see events characteristically determined by forces such as fate, luck, or chance. Lefcourt (4) and Rotter (7) have also reviewed the literature that relates these individual differences in control expectancies to such factors as perceptual decision making (12), social action taking (2), and knowledge of and seeking information about life conditions (10, 11).

Results most relevant to the hypothesis under study here were those reported by Strickland & Rodwan (12). They found that scores on the internal-external control dimension (the IE scale) predicted the type of errors made in a decision-making task. Their results showed that internals appeared to adopt strategies that maximized their perceived control of the situation. This finding raised the question of whether the internal-external control dimension also determines differential preference for conditions that appear to offer maximum control of task outcomes. This preference was hypothesized in the present study; confirmation would suggest that there are important motivational characteristics associated with the level of expected internal or external control of reward.

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B. STUDY 1²

In order to examine this hypothesis it was necessary to contrive conditions that differed in their perceived locus of control, but that were equivalent with respect to the expectation of success. The method employed was suggested by the pioneering studies of gambling behavior conducted by Cohen (1).

1. *Method*

Each subject (*S*) was first asked to estimate his performance at each of a number of distances in throwing 12 darts at a target. After establishing the distance from which he judged he could score with five and seven darts respectively, *S* was asked to choose the distance from which he would prefer to throw, given the constraint that at the closer distance he would be provided with only five darts, while at the farther distance he would be given seven darts. In other words, the conditional probabilities of success were equated for the two distances, but they differed in the degree of actual control that the subject could exert over the outcome.

Ss consisted of 28 undergraduate women enrolled in introductory psychology at the State University of New York at Buffalo. They were randomly sampled from a pool of 57 women who had previously completed a battery of psychological tests, including the IE scale. The IE scale consists of 29 paired statements, the subject choosing the statement in each pair which he more strongly believes to be true. Scores derived from this scale show the number of internal control alternatives chosen by the respondents for the 23 keyed items. Sample items are:

1. a. Many of the unhappy things in people's lives are partly due to bad luck; b. People's misfortunes result from the mistakes they make.
2. a. In the long run people get the respect they deserve in this world; b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

2. *Results and Discussion*

Internals and externals were defined respectively as those subjects who had scored above and below the mean on the IE scale. The results clearly confirmed our hypothesis. On this task, where alternative distances from the target had been equated for each subject for perceived probability of success, significantly more of the internal than the external control subjects chose the closer position from which they had greater control of their performance ($p = .05$,

² This investigation was reported at the Midwestern Psychological Association Convention, Chicago, Illinois, May, 1964.

by Fisher Exact Test). This finding was thus consistent with the authors' general hypothesis that there are important motivational differences associated with IE orientations. A second approach to the investigation of control motives is reported in Study 2 below.

C. STUDY 2

1. *Rationale and Method*

The authors started with the basic view that there are motivational aspects of IE, perhaps a differential "need to control," and planned to examine here individual differences in this motivation by removing the possibility of controlling performance or outcomes. The prediction was that interfering with control of performance would be more frustrating to internals than externals, if internals have a higher need for control. A modification of the dart throwing game was used to test this hypothesis: subjects had to throw darts with little control over their success. To achieve this condition, they were simply blindfolded while tossing their darts at the target. Dependent measures were derived from assessments of emotional reactions which the subjects exhibited under these conditions.

2. *Subjects*

Forty-eight undergraduate women were recruited by phone from the pool of introductory psychology students at State University of New York at Buffalo. Two groups were constituted: 26 internals and 22 externals. Women were again used because of their greater availability. For this study, internals were sampled from those who had scored at least one standard deviation above the mean of the overall distribution and externals at least one standard deviation below the mean. Scores for the internals ranged from 18 to 23 and for externals from 4 to 11.

3. *Procedure*

Instructions for the dart throwing task were as follows:

I would like you to stand here at the nine-foot line. Your job is to throw these 12 darts at the target. Get a good idea of how far away the target really is. Get properly lined up. Now I would like you to throw these darts, but under some strange conditions. First, I am going to blindfold you. Then I will hand you the darts one at a time to throw at the target. This is not easy. Concentrate and do the best that you can.

SS were then blindfolded and they proceeded to throw each of the 12 darts. Two experimenters (*Es*) were present during this procedure: one *E* instructed

S, while the other observed and recorded her performance. *E* also sought to interfere with *S*'s performance by making remarks, such as: "Come on. I think you can do better than that"; and later, "This is not an easy task; are you really trying?" When *S* had thrown all 12 darts, she was escorted blindfolded to an adjacent room where a third *E* conducted a postsession interview. The interview concluded with a thorough description of the purposes of the study. During this procedure, *Es* were of course unaware of *S*'s classification as internal or external.

The primary data consisted of (a) *S*'s dart throwing performance, (b) assessments by the observer of *S*'s embarrassment or irritation, and (c) postsession comments by *S* indicating any embarrassment or irritation that she experienced. These latter assessments were made on two graphic rating items which ranged from "not at all embarrassed" to "quite embarrassed" and "not at all irritated" to "quite irritated." The sum of these two judgments was the major dependent variable. In addition to these questions, the interviewer asked each *S* whether she was distracted by *E*'s comments while she was trying to throw the darts.

4. Results

A differential need to control was proposed for internals and externals leading to the hypothesis that when throwing darts blindfolded, a task where one can exert little control, internals would be more concerned, frustrated, and distracted than would externals. Table 1 presents the relevant data. Affective reactions strongly differentiated the two groups, both in terms of the ratings made by the observer and also the ratings provided from the subjects' postsession comments. Nonetheless, the results were startling because the direction of the observed difference was opposite to the authors' prediction. Further, when subjects were asked whether they were distracted by the experimenters, the externals said "yes" significantly more often ($p [\chi^2 > 6.32] < .02$) than did the internals. The actual numbers of darts scored were, however, quite comparable for the two groups, 1.2 and 1.6 darts for internals and externals respectively.

D. DISCUSSION

Results from these dart throwing experiments generally supported the hypothesis of motivational differences in IE; however, the greater emotional reactions displayed by the externals than by the internals in the blindfolded condition clearly call for a modification of the authors' thinking. A recent investigation by Rotter and Mulry (8) may be helpful in interpreting this un-

anticipated result. Rotter and Mulry argue that there is an interaction between IE and the nature of the task situation. Situations where outcomes are clearly determined by the skilled performance of the subject are presumably of greater concern to the internally oriented person, whereas comparable situations where performance is seen as unrelated to outcomes are of greater concern to the externally oriented person. Rotter and Mulry find support for this hypothesis in the relatively longer decision times shown by internals under skill conditions, contrasted with a trend in the reverse direction under chance conditions.

TABLE 1
REACTIONS OF THE INTERNALS AND EXTERNALS TO THE BLINDFOLDED TASK

Variable	Externals (<i>N</i> = 22)	Internals (<i>N</i> = 26)	<i>t</i>
Mean rating by observer of irritation or embarrassment	5.13	4.0	2.49*
Mean self-report of irritation or embarrassment	7.50	3.76	2.23*

* $p < .05$, two-tailed test.

This contrast between skill and chance task conditions maps well to the dart throwing game used in the present studies. Throwing darts under usual circumstances is presumably a highly skilled task; although the authors have no data, they would predict a greater concern with performance for the internals. Throwing darts blindfolded, the task condition of Study 2, would seem definitely to be a setting where successful performance was seen to be largely a chance event. Hence, in this latter setting, it would be the externals who would be more concerned with their performance. Indeed, this seems to be the case, as evidenced in their greater frustration and embarrassment. This rationale, admittedly *post hoc*, provides a promising lead to further research where skill and chance task parameters are both varied to examine the potential interaction with IE motivations.

E. SUMMARY

Two studies were reported which investigated the motivational components of Rotter's internal *vs.* external control. A dart throwing game was used to test the hypotheses that (a) internals *prefer* circumstances under which they can exert greater control over their outcomes; and (b) internals have a higher need to control, which results in greater frustration when that control is blocked.

The first part of the hypothesis was supported when internals showed a relatively stronger preference for throwing darts from a closer distance, even

though this distance had been equated for the probability of overall success. The second part of the hypothesis concerned with blocking the presumed need for control was not sustained. Counter to the hypothesis, it was the external individual who reacted more strongly to the blindfolded, dart throwing condition than did the internal individual. This latter finding was interpreted as resulting from the perception of the blindfolded task as a "chance" condition in which externals are generally more concerned with their performance than are internals.

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NUMBER OF REINFORCEMENTS, CONDITIONED LEADERSHIP, AND EXPECTANCY OF REWARD*

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A. INTRODUCTION

There have been a number of studies that have shown that group processes, such as decision-making activities, order of speakers in a group, and duration of speaking may be manipulated by the use of reinforcement contingencies (1-11). Furthermore, a rating of leadership by individual members of a group could be manipulated in a similar fashion and, in fact, correlated highly with duration of speech in a leaderless group discussion.

Hastorf (4) provided "private" feedback to group participants and found that when group members were told that their performance would be evaluated by "experts" and they were notified privately, by means of lights, visible only to themselves, their behavior changed, and interestingly enough, so did the perceptions of the group towards the individuals. He further commented that the reinforcement of the target (reinforced) individual resulted in changes in demeanor, in the direction of greater "assuredness" and interest. These results provided speculation as to the components of leadership when it was shown that simply increasing the amount of verbalization altered an individual's leadership rating in the group.

This basic design has been utilized further, in an attempt to explore some additional parameters by Simkins and West (11) and Aiken (1).

Simkins and West isolated the group participants from each other and so controlled for the effects of some nonverbal cues, such as smiling or head-nodding, on leadership perceptions. Their results supported those reported by Hastorf in that a combination of rewards to a target individual and punishment to the other group members resulted in the most extreme modification of the group behavior in regard to duration of speaking. However, they also noted that their results appear to be only temporary.

Aiken modified the design reported by Hastorf by extending the operant and conditioning periods to 40 minutes and found results similar to those reported by Hastorf who used 20-minute periods.

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When the data from the previous studies were analyzed it appeared that there was a rapid extinction of the leadership responses that is not in agreement with what we see in the "real world." It certainly appeared that temporary changes could be brought about as a result of rewards and punishments, but would a longer conditioning phase maintain the conditioned leadership further into the extinction portion of the experiment? This study attempted to explore the resistance to extinction of the leadership responses under longer conditioning periods and look at the expectancies of the individuals regarding the likelihood of their being correct in a group discussion.

B. METHOD

1. *Subjects*

The subjects were 20 groups of four girls, each drawn from introductory psychology classes at the University of Tennessee. The groups were randomly composed of those individuals able to serve at the same time.

2. *Procedure*

The Ss were seated and the instructions read.

They stated, generally, that the experiment was designed to study the various characteristics of group problem solving.

The concept board had one light on and the Ss had one minute to decide which light would be the next in a series to come on. They were instructed to consider such things as color, shape, size, and orientation of the figures beneath the lights, and the numbers or positions of the lights themselves. After the Ss passed their individual guesses to the experimenter through a slot in the wall, they were given varying times to arrive at a group solution as to which light would be the next in the series. After the eighth light, they were all turned off and a new series was begun.

During the concept task, *E* recorded each *S*'s individual guesses, the group guesses, and the number of the light actually turned on for each of the decision trials comprising the eight-light sequence. For the operant period, *E* turned on no lights that had been mentioned by a group member on that or any preceding trial.

Following the operant period, which was used to determine a base level of the extent to which the group as a whole followed any of its members, a questionnaire was administered to evaluate which member seemed to speak the most, have the best ideas, and influence the group the most.

In addition to the individual guesses each *S* made as to the next light in the series, each *S* was further requested to make an individual estimate as to the

probability of her guess being the correct solution according to the program.

The groups were given an operant period of eight lights in a sequence, followed by a conditioning period during which a target individual was reinforced for her responses (by having her individual guess become the correct one) on five of the eight trials. The target individual was selected by taking the person with the third most votes in the postoperant period questionnaire. The groups were further divided by having half of them receive reinforcement on five of the trials, while the other half received 10 reinforcements on 16 trials, or double the conditioning period. Following the conditioning period, an extinction period, similar to the original operant period, was run.

C. RESULTS

The results may be considered in two parts. The first deals with the number of times the group followed the target individual or the resistance to extinction under the two different conditioning periods. This analysis of the number of times the group followed the target individual during the extinction period, under the different conditions, showed no differences for the two groups ($t = .21$, $df = 9$). However, the reinforcement effect was consistent for *all* groups in that every target individual increased in number of times followed during the conditioning period.

The expectancy data provided a possible explanation for this similarity of resistance to extinction behavior of the two groups. These expectancy data are the individual's estimate of the likelihood of her guess being the correct one on any subsequent trial. The range is from 100 per cent expectancy, or great assuredness, to zero per cent expectancy, or great assuredness that one is going to be wrong. An examination of Table 1 shows the expectancy data for the two groups.

TABLE 1
THE MEAN EXPECTANCIES OF GROUP MEMBERS AS TO THE
LIKELIHOOD OF THEIR BEING CORRECT

Operant	Group	Period	
		Conditioning	Extinction
10 Ra	19.3	33.9	14.6
10 Rb	15.0	25.9	12.3
10 Rc	17.4	65.0	9.1
5 Ra	9.6	36.3	12.1
5 Rb	17.9	35.9	22.1
5 Rc	17.1	54.6	10.6

^a Nontarget individuals.

^b Initial leader during the operant period.

^c Target person.

It can be seen that most subjects began with a low expectancy of being correct on any given trial. There were, however, large differences between subjects during this initial expectancy period. After the first reinforcement, the expectancy of most target individuals rose and continued to rise (with some fluctuation) during this period. At the beginning of the extinction period and, in fact, during the nonreinforced trials in the conditioning period, there was a drop in expectancy. This rapid fluctuation indicated a lack of commitment or confidence in one's judgments, which was, in fact, borne out during later interviews with the subjects.

D. DISCUSSION

The results have shown two interesting points. The first is the lack of difference in resistance to extinction of the groups given differing numbers of reinforcement; and second, the apparent artificiality of the conditioning situation in evaluating leadership behavior. The rapid fluctuations in expectancies seemed to account for the rapid extinction noted by some of the previous researchers in the area. Perhaps the conditioning of leadership behavior is not sufficient, under these conditions, to account for what we commonly consider "leadership behavior."

One further point of interest lies in the evaluation of expectancies among the nonrewarded members of the group when the target person was rewarded. It appears as if the rewarding of any member of the group resulted in an increase in the expectancies of all other group members. This may be another area of fruitful examination.

E. SUMMARY

This study attempted to examine the relationship between number of reinforcements, conditioned leadership, and expectancy of reward. It was found in 20 groups of four girls each that increasing the number of reinforcements to a target individual in the group did not affect the resistance to extinction of the response. It was further found that the expectancies of the individuals regarding their guess being correct fluctuated in much the same fashion as the leadership behavior.

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THE STRENGTH, RELEVANCE, AND SOURCE OF BELIEFS ABOUT AN OBJECT IN FISHBEIN'S ATTITUDE THEORY*

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A. INTRODUCTION

Fishbein (5, 6) has proposed a theory of attitude change based on an individual's beliefs about an attitudinal object and his evaluations of these beliefs. The theory is summarized by Fishbein (6, p. 233) as follows:

(1) An individual holds many beliefs about any given object, i.e., many different characteristics, attributes, values, goals, and objects are positively or negatively associated with a given object; (2) associated with each of these "related objects" is a mediating evaluative response, i.e., an attitude; (3) these evaluative responses summate; (4) through the mediation process, the summated evaluative response is associated with the attitude object, and thus (5) on future occasions the attitude object will elicit this summated evaluative response, i.e., this attitude.

Operationally, the relation between the beliefs and evaluations in the determination of an individual's attitude is formulated as follows:

$$A_o = \sum_{i=1}^N a_i \cdot B_i$$

where A_o is the attitude toward the object o ; B_i is the strength of belief i about o (i.e., the likelihood that the attitude object is related to some other object x_i); a_i is the evaluative aspect of the associated object x_i ; and N is the number of beliefs held by the individual.

Considerable research relevant to Fishbein's theory has been carried out in the past few years. Fishbein and Hunter (9), Anderson and Fishbein (1), and Anderson and Hackman (2) have compared $a_i B_i$ predictions with those made by Osgood's "congruity" formulation (e.g., 13), and have demonstrated the superiority of the Fishbein model in this "horserace" situation.

Triandis and Fishbein (16) have applied the summation theory formula to interpersonal perception, and Fishbein (7) has demonstrated a positive relationship between predicted attitudes and sociometric choice in a small group

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research setting. Finally, Fishbein and his associates have had considerable success in applying the theory to political behavior (e.g., 3, 4, 8, 11).

Fishbein's theory must be considered "rich," since it has yielded strong results in many kinds of experimental settings. Yet some of the fundamental implications of the model remain to be tested explicitly. This paper will examine three issues relevant to the *beliefs* used in the prediction paradigm: (a) the relationship between "strength of belief" and the position of beliefs in the "belief hierarchy" of the subject; (b) the "relevance" of the beliefs to the measurement situation; and (c) the "source" of the beliefs employed in attitude measurement—whether supplied by (and thus idiosyncratic to) the individual subjects or provided by the experimenter (or some other external source). These issues will be discussed in detail below.

1. Hierarchical Position and Belief Strength

Fishbein (5) conceives of the "belief system" of an individual about an attitude object in terms of a "habit family hierarchy" after Hull. Thus, says Fishbein, "This conception of a belief system provides us with an independent criterion of belief strength, since the higher the response is in the hierarchy, the greater is the probability that the response is associated with the stimulus, i.e., the stronger is the belief" (5, p. 23).

It follows that those beliefs that are high in the individual's "habit family hierarchy" will be those that are elicited *first* when a subject is asked about his beliefs about some attitude object; those beliefs low in the hierarchy will come forth later in his listing, if at all.

Subjects in the present study were asked to list their beliefs about a particular attitude object, and then (later) to indicate the strength of these beliefs: i.e., the probability with which they felt the beliefs were associated with the attitude object, following Fishbein and Raven (10). This procedure allows a straightforward test of the assumption of Fishbein's theory: if the assumption is correct, those beliefs that are high in the hierarchy should also be rated as being "stronger" beliefs; and a positive relationship between hierarchical position and belief strength should be obtained for each subject.

2. Relevance of the Measurement Situation

The "relevance" of a belief will be defined as the degree to which a particular belief is important to a subject in evaluating an attitude object when a *specific criterion* is used. An example may help clarify the definition.

Assume a university faculty member has a reputation among students for extremely "hard" grading—no student ever receives an "A" from him, and

large numbers of students receive failing marks. Assume also, however, that this faculty member is known as one of the finest handball players on campus. Now, an individual could hold two strong and valid beliefs about this person: (a) "a terrible grader" and (b) "an outstanding handball player." If, in the mind of an hypothetical student-subject, (a) "terrible grader" carries negative affect, (b) "outstanding handball player" carries positive affect, and (c) both beliefs are high in the subject's belief hierarchy, then *both* beliefs would contribute significantly to the measured overall affect of this subject toward the faculty member.

If, however, our respondent were asked to indicate which faculty member he would prefer as a partner in the annual student-faculty handball tournament, the situation changes dramatically. Now "terrible grader" is of little significance, while "outstanding handball player" becomes quite critical. Thus, when the faculty member is being evaluated against this specific, nonacademic criterion, beliefs about his classroom behavior assume low relevance and would be expected to be of minor importance in determining the attitude of the student toward him *vis à vis* the handball tournament.

We are led to expect, therefore, that when an attitude object is being evaluated against a specific external criterion or with respect to a particular measurement situation, the operation of belief strength (B_i) *alone* in determining the relative "weighting" of beliefs elicited by the subject about the object may not be totally adequate.

One way to avoid the difficulties outlined above would be to weight each of the beliefs elicited by the subject by a factor reflecting the relevance of the belief to the particular measurement situation. In this case, our hypothetical subject would indicate how relevant each of his beliefs about "professor X" was to a "handball playing situation." These ratings of relevance would be incorporated into the prediction formula in such a way that the contribution of relevant beliefs would be increased, while the contribution of less relevant beliefs would be simultaneously decreased.

This is done in the present study by adding a "relevance" (or R_i) factor to the $a_i B_i$ formula. We will compare the relative effectiveness of the traditional $a_i B_i$ formula with that of an $a_i B_i R_i$ modification in predicting subjects' attitudinal responses in three different criterion situations. It is expected that the addition of the relevance factor will not substantially affect the precision of prediction of purely affective criteria,¹ since in this case the relevance or irrelevance of beliefs to some particular criterion is tangential to the global attitudes

¹ Evaluation of the attitude object measured on the evaluative scales of Osgood's Semantic Differential, described in Osgood, Suci, and Tannenbaum (14).

which are being measured. For situations in which the attitude object is being evaluated with respect to a specific criterion or in a particular measurement situation, however, it is expected that the addition of a relevance factor will significantly improve the level of prediction obtained.

3. *Source of Belief*

The third area dealt with by the present study involves the *source* of the beliefs that are used in the a_iB_i formulation. In discussing the nature of the belief hierarchy, Fishbein says: "... since attitude acquisition occurs in conjunction with concept formation, it can be assumed that those things that help the individual define and discriminate the 'concept' play a major role in shaping the individual's attitude" (5, p. 31). Similarly, Fishbein notes that an individual's attitude toward an object is partially a function of "his beliefs about that object" (5, p. 29).

These statements—as well as considerations raised in earlier sections of this paper—imply that the beliefs used in a_iB_i predictions optimally should be elicited by the subjects themselves, rather than, say, be supplied by the experimenter or some other outside source. Thus, if the a_iB_i formulation is an appropriate model of the process by which individuals form and change their attitudes, the particular beliefs which particular individuals have about the attitude object should be used in arriving at predictions of attitude.

In fact, however, much of the research carried out with the a_iB_i formulation has employed beliefs supplied by the experimenter to all subjects (e.g., 1, 6, 9), although these belief sets were sometimes assembled by taking the beliefs most often elicited by the experimental subjects.

For example, in predicting attitudes toward the concept "Negro," Fishbein (6) first determined the beliefs most frequently associated with the concept, and then gave *all subjects* this single set of "most frequently mentioned" characteristics. Now, it is evident that for most subjects there will be a high correspondence between the beliefs presented to them and those that they *individually* would have supplied, but the use of this "group" technique obviously blunts some of the elegance—if not predictive precision—of Fishbein's formulation. For if the implication of the theory is correct (that subjects' actual, elicited beliefs about the attitude object form the proper base from which predictions of global evaluations should be made), then those beliefs which are idiosyncratic to individuals should yield markedly more powerful predictions than would a common set of beliefs given to *all* subjects.

The present study will examine the relationship between the a_iB_i formulation and a global evaluative criterion under three source conditions: (a) when

beliefs are elicited by each subject and thus are idiosyncratic to that subject, (b) when a standard set of beliefs (those most frequently elicited by the total pool of subjects) is given to all subjects (e.g., 6), and (c) when an arbitrary set of beliefs (with few or no beliefs included which were elicited by the subjects) is given to all subjects. It is expected that prediction of the evaluative criterion will be maximized for condition (a) and minimized for condition (c).

B. METHOD

1. *Subjects*

Subjects were 63 students enrolled in an introductory social psychology course at the University of Illinois.

2. *Attitude Object*

The attitude object was the instructor of the course ("Mr. A"). Subjects indicated on the first day of the course that, without exception, they had no prior acquaintance with Mr. A.

3. *Procedure and Instruments*

Near the end of the academic semester, students were administered a battery of questionnaires by one of the experimenters, who had no apparent connection with the attitude object. In asking for the cooperation of the students in the study, the experimenter explained that the research was being carried out with the consent of Mr. A, and that coding procedures were being used which insured that the ratings of individual students could not be identified.

The questionnaires in this battery included the following:

a. *The Elicitation Form.* Subjects indicated on this instrument the beliefs that they held about the attitude object (limit: 10 beliefs), the strength with which they held each belief (scale: zero to 6), the evaluation they associated with each belief (scale: +3 to -3), the relevance of each belief to a "student-teacher relationship" (scale: zero to 6), and the relevance of each belief to an "interpersonal friendship relationship" (scale: zero to 6). All scales were accompanied by full explanation of their meaning and examples showing how they were to be used.

b. *The Evaluation Scales.* The criterion of "global evaluation" for the study was defined as the rating given the attitude object on five evaluative scales of Osgood's (14) Semantic Differential: good-bad, wise-foolish, sick-healthy, clean-dirty, and harmful-beneficial.

c. *The Behavior Differential.* Subjects rated the attitude object on 15 nine-

point scales designed by Triandis (15) to tap a "behavioral" component of attitude.

d. *The A and B scales: elicited beliefs.* These modified Semantic Differential scales were designed by Fishbein and Raven (10) to provide a highly reliable estimation of the strength with which beliefs about an attitude object are held, and the evaluative nature of these beliefs. The Semantic Differential items for the evaluative scales were identical with those described in Anderson and Fishbein (1). The items for the belief scales were true-false, existent-non-existent, probable-improbable, possible-impossible, and likely-unlikely. Subjects copied the beliefs they had elicited about Mr. A onto these forms before making their ratings.

At the next meeting of the class, the subjects were given a second set of questionnaires. These included the following:

a. *The A and B scales: standard beliefs.* These scales were identical to the A and B scales described above, except that a standard set of beliefs was already printed above the scales. The standard beliefs presented were the eight beliefs most frequently mentioned on the Elicitation Form (included in the first set of questionnaires). Subjects were told that the standard beliefs were "the beliefs listed by one individual in the class," and that they were being used to "provide a measure of the homogeneity of the class's beliefs."

b. *The Situation Scales.* These scales were designed to provide sociometric-type criteria with respect to 1) interpersonal friendship and 2) student-teacher relationships. Hypothetical situations were presented to the subjects in which they were asked to choose among seven behavioral alternatives, ranging in degree of favorableness toward the attitude object. One of the situations involved a proposed social gathering (interpersonal friendship situation) and the other involved the selection of future academic courses (student-teacher situation).

After the administration of this questionnaire, the subjects were informed in full about the purposes and procedures of the experiment.

C. RESULTS AND DISCUSSION

1. *Hierarchical Position and Belief Strength*

It was expected from the assumptions of Fishbein's theory that there would be a positive relationship between the position of a belief in a subject's hierarchy and the strength of that belief. To test this expectation, correlations between hierarchical position (first, second, third, etc.) and rated belief strength were computed for each of the 63 subjects, with the use of the beliefs which they had listed on the Elicitation Form. These correlations ranged from $-.85$ to $+.95$, with a median value of $-.32$, indicating that, to a moderate degree, those be-

liefs relatively higher in the belief hierarchy (i.e., those with low ranks) were in fact "stronger" beliefs than were beliefs low in the hierarchy. The wide range of values across subjects and the relatively low magnitude of the median indicates, however, that there is by no means a "one-to-one" relationship between hierarchical position and belief strength, as might be expected from the arguments presented by Fishbein (5).

This "positive but weak" relationship is, nevertheless, not entirely unexpected. Unreliability of the measure of belief strength may have attenuated the size of the relationship to some degree or, more importantly, it may have been that unreliability in the psychological process by which beliefs are drawn from a subject's response hierarchy may have obscured the relationship. A third possibility is that beliefs high in the hierarchy are the most *relevant* beliefs—not necessarily the "strongest." A check on the correlations between hierarchical position and relevance scores, however, showed that these correlations, too, ranged from nearly -1.0 to nearly $+1.0$, with medians of $-.17$ and $-.10$ respectively for "student-teacher" and "interpersonal friendship" relevance scores. Thus, this possible explanation for the obtained results is not supported by the data.

In summary, the data provide moderate—but by no means unambiguous—support for the assumption of the $a_i B_i$ formulation that hierarchical position is positively related to belief strength.

2. *Relevance of the Measurement Situation*

This section will present results from a comparison between the predictive effectiveness of the traditional $a_i B_i$ formula and a new formula ($a_i B_i R_i$) which explicitly incorporates a "relevance" term. It was expected that (a) the addition of the relevance terms would not improve prediction of a "global" evaluative criterion; (b) the addition of a "student-teacher" relevance term would improve substantially predictions of the "academic" situational criterion; and (c) the addition of an "interpersonal friendship" relevance term would improve substantially predictions of the "social" situational criterion. Results are presented in Table 1.

The inclusion of the two relevance factors in the $a_i B_i$ formulation did not significantly affect the level of prediction achieved, either for the global evaluative criterion (as had been expected) or for the "situational" or "sociometric" criteria (contrary to expectations).

Thus, although inclusion of the relevance factors does not appear to *hurt* prediction, neither does it help, at least for the criteria used in the present study. Two possible explanations for this state of affairs seem apparent. One is

that the situational criteria primarily reflected relatively "pure" evaluation and thus were empirically indistinguishable from the Semantic Differential evaluation criterion. This possibility gains some support from the fact that the Semantic Differential criterion correlates with the sociometric criteria at about the same level as do the three predictors, perhaps indicating that *all* measures involved—predictors and criteria alike—are imperfectly reflecting a general evaluation factor, with no two measures tapping a large per cent of this evalua-

TABLE 1
EFFECTS OF ADDING A FACTOR OF RELEVANCE TO FISHBEIN'S $a_i B_i$ FORMULA

Predictors	Criteria				
	I ^a	II ^a	III ^a	\bar{X}	<i>SD</i>
$a_i B_i$.46	.48	.44	51.4	30.2
$a_i B_i R_i$ (student-teacher)	.48	.46	.36	231.5	150.1
$a_i B_i R_i$ (interpersonal)	.50	.40	.37	196.7	141.3
Evaluative criterion	—	.39	.34		
\bar{X}	6.08	5.00	4.48		
<i>SD</i>	0.64	0.95	1.33		

Note: All correlations significantly different from zero at the .01 level. No differences between pairs of correlations significant at the .05 level. $N = 63$.

^a I = Evaluative criterion; II = "Student-teacher" situational item; III = "Interpersonal" situational item.

tive variance in common. This interpretation loses credence, however, when one considers that the two sociometric items themselves were correlated only .46. Even if we assume that the 20 per cent of variance these items have in common is really "pure" evaluation (of the type measured by the Semantic Differential), we still must explain the other 80 per cent "specific" variance of each and, importantly, why no differences in predicting the two items separately were obtained. Substantial relationships obtained between the sociometric criteria and other measures (not reported in this paper) indicate that this 80 per cent variance is not mainly error variance due to the unreliability of the criteria.

A second—and probably more plausible—explanation is simply that the inclusion of "relevance" factors of the type suggested in the introduction to this paper are not useful in improving the level of prediction obtained with the Fishbein formulation for the kind of criteria used in this study. This, of course, is not to say that the inclusion of relevance factors would not be useful in other kinds of situations. For example, an alternative way of treating the "relevance" issue has been suggested by Manis (personal communication) and Manis *et al.* (12).

In sum, then, it would appear that, for the kind of situational criteria

which were used, the Fishbein a_iB_i formulation in its present form handles the "relevance" problem, as well as the reformulation suggested here.

3. Source of Beliefs

Comparison was made between three different "belief sources": (a) the idiosyncratic beliefs elicited by each subject; (b) beliefs supplied by the experimenters, representing the "most frequently elicited" beliefs of the 63 subjects; and (c) beliefs incorporated into the Behavior Differential questionnaire, which are, in general, completely external to the belief systems of the subjects. It was expected on the basis of Fishbein's theory that prediction would be maximized when the elicited beliefs were used and minimized when the "external" (Behavior Differential) beliefs were used.

The results did not confirm the expectations from the theory. The "elicited" beliefs yielded a correlation with the evaluative criterion of .46, the "standard" beliefs yielded a correlation of .62, and the "external" beliefs yielded a correlation of .55. All correlations were significantly different from zero. And, although the pairs of correlations are not significantly different from one another (two-tailed test), the difference is rather strikingly in the *wrong direction*. We must conclude, therefore, that the expectation from the theory was not supported and, indeed, tended to be contradicted.

The superiority of the "external" (Behavior Differential) predictions over those obtained by using "elicited" beliefs are especially damaging to the a_iB_i formulation, since, in addition to the fact that the beliefs on the questionnaire were not elicited from the subjects, three other characteristics of the Behavior Differential suggest that it should predict the affective criterion less well than the a_iB_i formula in this situation. To wit: (a) the beliefs on the Behavior Differential often are quite irrelevant to student ratings of a teacher (e.g., "I would prohibit this person from voting"); (b) the scale is designed to measure behavioral intentions—*not* affect; and (c) the questionnaire does not allow both the strength and the evaluation of each of the beliefs to vary. That is, the person indicates only the extent to which he would or would not endorse each of the statements without having the opportunity to indicate the degree of favorableness with which he perceives each statement. Thus, the a_iB_i predictions should have been expected to better those of the Behavior Differential in this situation on several bases; that it did not appear to be a relatively severe indictment of the a_iB_i formulation.

Three possible explanations for the unexpected reversal in direction between the "standard" and "elicited" beliefs have been offered, and have been checked as far as possible with the present data.

1. The scales used to measure the belief strengths and evaluations of the elicited beliefs may have been less reliable than those used for the standard beliefs. This explanation has "face credence," since the instrument used for obtaining the a_i and B_i scores for elicited beliefs employs a single scale, whereas the belief strengths and evaluations of standard beliefs were measured on the Fishbein and Raven (10) A and B scales, each of which consists of *five* Semantic Differential type scales. To check this possibility, subjects' ratings of the elicited beliefs on the A and B scales were used to compute a new $a_i B_i$ score for each subject, and these scores were correlated with the criterion. This procedure should have negated any differences due to unreliability, since A and B scales of identical format were used to obtain ratings of the standard beliefs. The correlation of this new set of scores with the criterion was .49, an increase of only .03 over the original prediction. We may conclude that unreliability of the Elicitation Form is not an adequate explanation of the differences.

2. Unpublished research by Doyle Bishop (personal communication) has suggested that it may be more appropriate to score strength of belief ratings from +3 to -3 (as is done for strength of evaluation) rather than from zero to 6 as was done in the present study. Bishop argues that, in indicating their belief strengths for a given belief, subjects may consider the lower half of the scale to be *disbelief*—not just a weak level of belief. Thus, if a subject rated an attitude object in the lower half of the scale for the belief "intelligent," Bishop would suggest that the subject might be trying to say he thought the attitude object was downright *stupid*. Bishop's research showed that, for beliefs provided by the experimenter, this method of scoring belief strength yielded a moderate increase in prediction. The writers would argue that such an increase should *not* be obtained for beliefs elicited from the subjects themselves, since subjects were asked to list only those beliefs which they actually held. It would be a contradiction in terms to score the response of a subject as if he *meant* "stupid" when he *listed* "intelligent." Yet this is exactly what would be done in some cases using the +3 to -3 scoring strategy: the direction of contribution of the beliefs to the total score is reversed for low strength beliefs—and thus, in fact, "intelligent" becomes its opposite, "stupid."²

Nevertheless, all belief strengths obtained in the present study were rescored on a +3 to -3 basis, and new predictor-criterion correlations were computed on the basis of these new belief scores. Predictions were not improved, either for the "standard" (experimenter-supplied) or for the subjects' own elicited

² It should be noted that this argument holds only for beliefs elicited by the subjects themselves. The +3 to -3 procedure does seem intuitively valid when beliefs are supplied by the experimenter, and Bishop's results tend to bear out this expectation.

beliefs. Indeed some small and nonsignificant *decreases* (averaging .05) in the magnitude of prediction achieved were found for the "elicited belief" conditions. This, of course, served to accentuate the size of the difference between the "elicited" and "standard" conditions, rather than to help explain why the "wrong direction" difference occurred.

3. Finally, the *number* of beliefs actually dealt with in the two conditions was examined. The mean number of elicited beliefs was 6.1 (*SD* of 2.2), while eight beliefs were supplied to each subject in the "standard" condition. It seems reasonable to assume that the more beliefs considered by an individual, the more valid will be any conclusions reached on the basis of these beliefs. Therefore, we might expect that predictions made with the standard set of beliefs should be superior to those made with the elicited beliefs because of the two more beliefs used, on the average, in the "standard" prediction equation.

To examine this possibility, $a_i B_i$ scores were computed from the standard set of beliefs with the use of only the first six beliefs presented to the subject. This made the average number of beliefs used in the "standard" and "elicited" conditions almost identical. These new $a_i B_i$ scores correlated with the evaluative criterion .60, or about .02 less than the predictions based on eight beliefs. Clearly, the difference is trivial, and we must reject this final possibility also, as an explanation for the superiority of the "standard" predictions over the "elicited" predictions.³

D. SUMMARY AND CONCLUSIONS

This investigation has examined three aspects of subjects' "beliefs about an object" in the context of Fishbein's attitude theory. Beliefs high in the subjects' "belief hierarchies" tended to be rated as "stronger" beliefs by the subjects, although the magnitude of the relationship was small. This finding provided some support for the implications of Fishbein's theory regarding belief strength and hierarchical position.

The addition of a "situational relevance" factor to the $a_i B_i$ formulation did not improve the magnitude of prediction obtained, either when the criterion was overall affect toward the attitude object or more specific "situational"

³ While the results reported in this section can be interpreted as "negative" with respect to the $a_i B_i$ theory, two qualifications on their generalizability should be noted. First, only one attitude object was used, in a particular academic setting. Without additional research with a variety of attitude objects in different settings, the present findings must be considered as suggestive and tentative rather than definitive. Second, there was a heavy "questionnaire load" on the subjects, which may have increased both the artificiality of the measurement situation and the proportion of measurement error in the data.

evaluations. This finding refuted the expectation of the present study, and tended to provide additional support for the Fishbein theory in its present form.

Finally, a set of "standard" beliefs provided to all subjects was found to yield substantially higher predictions of the affective criterion than did idiosyncratic beliefs elicited by the subjects themselves. This finding is exactly opposed to the implications of the a_iB_i theory and tends to cast considerable doubt on the theoretical contention that beliefs elicited by the subjects themselves are the proper basis for generating predictions of global evaluative judgments.

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INTENSITY OF ASSERTION AND THE CONGRUITY PRINCIPLE*

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A. INTRODUCTION

Aware of the earlier work of Heider (1), Osgood and Tannenbaum (2) have formulated a model of cognitive dynamics that attempts to isolate and identify some of the factors involved in attitude change. As proposed by Osgood, Suci, and Tannenbaum (3), the congruity principle posits that when two signs are related via an assertion, the mediating reaction of each shifts toward congruence with that of the other—the magnitude of the shift being inversely proportional to the intensity of the interacting reactions. Tannenbaum (4), in a study designed to test this model, found the direction of attitude change was as predicted in every case, while the predicted and actual magnitude of the shift correlated at $r = .91$. While concern in his study was with the existing attitudes towards source and concept, in this paper it is devoted also to an aspect of the communications content: i.e., the intensity of assertion.

Since Osgood¹ has noted that predicted attitude shifts are large when either source or concept is highly polarized and the other is relatively neutral, this study restricts itself to the instance where the source is judged as highly favorable, while the concept is relatively neutral. Concern is devoted exclusively to the concept-shift of attitude. The problem, then, in interrogative form can be posed: does greater concept-shift of attitude accompany assertive copula of greater intensity?

B. METHOD

1. Subjects

The subjects numbered 145 volunteers of mean age 34.7 years, comprising 90 males and 55 females who were following graduate summer courses in the University of Ottawa Faculty of Psychology and Education.

2. Procedure

This study was implemented in three stages. In the first stage, 98 subjects, comprising four groups chosen at random out of a total of seven groups, com-

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¹ Charles E. Osgood, personal communication, 1965.

pleted a selection questionnaire. They also rank ordered 11 assertive links in terms of the degree to which they linked or bound a source representative A to a concept representative B. The selection questionnaire allowed subjects to indicate their overall feelings with respect to 26 potential sources and 26 potential concepts on a single continuous bipolar horizontal scale with the five cues—Favor, Slightly Favor, Neutral, Slightly Disapprove, and Disapprove—placed beneath. From the normalized ranking procedure, scale values, which ranged from 2.4 to 7.7 on a nine-point C scale, were computed for the assertive links. From these 11 copula, three—namely, “is indifferent to,” “favors,” and “offers 100 per cent support to”—were chosen as they represent nearly equal increments in C scale values of intensity, and because they appear to sample considerable variation in intensity of assertion.

From the selection questionnaire seven experimental source-concept pairs were chosen which best satisfied the criterion that sources be judged as highly favorable and concepts be viewed as relatively neutral. In addition, three “filler” pairs were employed so as to allow subjects the use of the unfavorable regions of the attitude scales. They did not enter further into the calculations.

In the next phase, one week later, all 145 subjects judged the selected sources and concepts in isolation on the first form of the semantic differential. The semantic differential was constructed to tap the evaluative dimension primarily and consisted of the following experimental scales: good-bad, fair-unfair, clean-dirty, pleasant-unpleasant, valuable-worthless, tasty-distasteful; and the following “filler” scales: large-small, strong-weak, fast-slow, active-passive. Experimental scales were selected so that (a) they had high loading on the evaluative factor with minimal loading on the remaining factors, and (b) judged relevance to the set of sources and concepts under consideration. Fillers were added so as to avoid an excess of repetition in the judgments placed by the subjects and were not used in the calculations.

Two weeks later, in the final stage, subjects were divided into three groups by the order of presentation of the final test booklets. One version contained assertions employing the copula “is indifferent to”; the second version used the copula “favors”; and the third version made use of the copula “offers 100 per cent support to.” In all the versions, sources and concepts were identical; so that the major difference between one version and another was the copula employed. Subjects were asked to rate the concepts in light of the assertion in each case on the same bipolar scales that had been employed in the first semantic differential booklet.

The study was presented to the subjects in the following manner. After being informed the study had no connection with any outside body, they were asked to complete the rank order procedure and fill in an opinion questionnaire

which the experimenter had constructed. A week later they were informed the questionnaire was to be compared with a standard measurement procedure and that their opinions were desired with respect to several of the items they had already seen. In the final stage subjects were told that indeed both the instruments compared closely and the precision of the latter was now to be investigated by having them rate one item of a news release in view of the whole news release. They were advised releases contained familiar items on purpose.

C. RESULTS

Difference scores, representing attitude shifts, were obtained by subtracting the semantic differential score of a concept when it was judged in isolation from the semantic differential score it received when it was judged in the light

TABLE 1
SUMMARY DATA FOR ANALYSES OF VARIANCE AND TESTS OF SIGNIFICANCE OF
DIFFERENCES BETWEEN MEAN CONCEPT SHIFTS OF ATTITUDE

Source	Concept	F-value*	Tukey test**
Kennedy	Congressional investigations	21.0	a,b
Churchill	British cabinet system	13.1	a,b
Jackie	Cultural ties with Kuwait	12.7	a,b
Vanier	Financial developments	13.7	a,b
Thant	Internat. monetary fund	21.4	a,b
Rev. King	Urban affairs committees	16.8	a,b
Elizabeth II	Luxembourg culture	6.7	a,b

* All F-values significant at less than .01.

** (a) p less than .01 when difference between means for Treatment I and II is tested; (b) p less than .01 when difference between means for Treatment I and III is tested.

of an assertion of a given intensity. The resulting D scores were then analyzed with the use of a one-way analysis of variance modeled after Winer's design (6) for unequal sample sizes. To test for significance of differences between mean attitude shift scores accompanying the various intensities of assertion, the Tukey (a) test was used.

In view of the fact that on a retest the average deviation per scale reading was found to fluctuate between approximately five- and six-tenths of one scale unit, it would appear that the stability with which subjects employed the tools of this experiment is rather high. It must also be added, however, that the time interval separating the two series of ratings was fairly brief, varying from 20 minutes to three days.

The results of the seven analyses of variance and the consequent tests of significance of differences between the concept-shift means accompanying the various levels of intensity of assertion are presented in Table 1. In the table the assertive link "is indifferent to" is termed Treatment I; "favors" is termed

Treatment II; and "offers 100 per cent support to" is termed Treatment III. Each of the F ratios for these analyses was found significant at the .01 level.

Of the 21 tests of significance of differences between mean concept-shift of attitude, 14 are significant at the .01 level. It can be noted that in every case the difference between mean shift accompanying Treatment I and Treatment II and the difference between that accompanying Treatment I and Treatment III is significant at the .01 level. On the other hand, the difference between mean concept-shift accompanying Treatment II and that accompanying Treatment III was not significant.

D. DISCUSSION

While many of the findings presented in the last section are in the expected direction and significant, it would appear that there are several others which do not echo these trends. In fact, from Figure 1, it can be seen that a greater shift of attitude accompanies an assertion of lesser intensity. A possible explanation for the apparently conflicting findings concerns the type of relationship which may exist between intensity of assertion, as it has been operationally defined, and concept-shift of attitude.

Figure 1 shows mean concept-shift scores plotted against the C scale values for the assertive link. From the graph one may notice the relationship to be a nonlinear one: a mean negative shift of approximately four points is seen to accompany Treatment I, while a mean positive shift of approximately six points is observed to accompany Treatment II. However, the mean shift accompanying Treatment III is only slightly larger than five scale units.

These findings may be comprehended in the light of a curvilinear relationship between intensity of assertion and concept-shift of attitude, wherein a point is reached after which increased intensities result in diminished attitude change. This reduced effect has been observed by Whittaker (5) in a slightly different context.

A possible explanation for the reduced effect observed in this study concerns the operation of another of the limiting parameters of the congruity principle; that is, the contiguity of the signs in the assertions. On the other hand, a finding which does not appear to support this interpretation lies in the fact that the shift accompanying "is indifferent to" differs significantly from that accompanying "offers 100 per cent support to," while the contiguity of the signs in each is approximately equal.

The reduced effect may also be due to the operation of another of the parameters of the congruity principle. The credulity of an assertion using "offers 100 per cent support to" as an assertive link may be judged as less than that of

an assertion employing the link "favors." In such a case, the cognitive stress occasioned by the greater intensity of assertion would be lessened by the weakened belief that the statement itself is valid, and consequently the shift toward congruence would be reduced in magnitude.

Mean Concept-Shift
of Attitude

S.D. Mean Difference
Scores

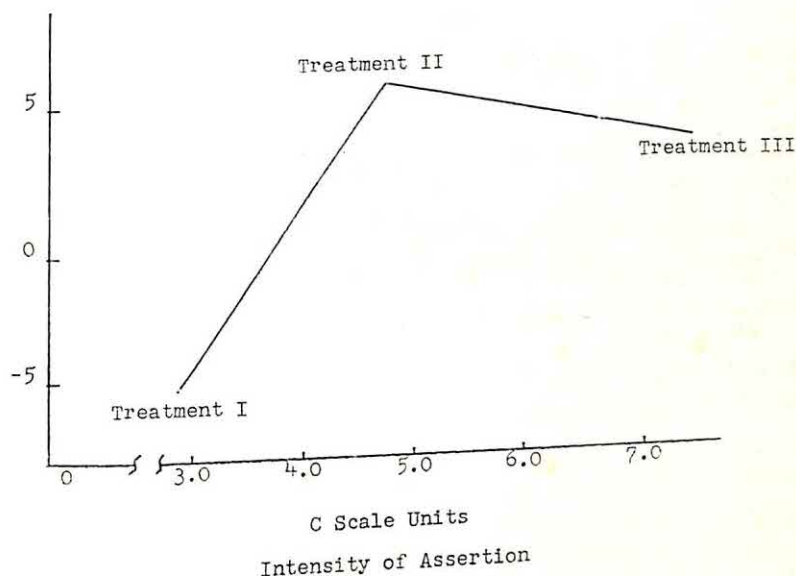


FIGURE 1
MEAN CONCEPT SHIFT OF ATTITUDE AS GIVEN BY SEMANTIC DIFFERENTIAL (S.D.) MEAN
DIFFERENCE SCORES vs. INTENSITY OF ASSERTION AS GIVEN BY C SCALE VALUES
FOR ASSERTIVE LINKS

In conclusion, the results in general support the contention that the limiting parameter of intensity of assertion influences the operation of the congruity principle, and a curvilinear relationship would seem to exist between these two variables when sources are judged as highly favorable and concepts are judged as relatively neutral.

E. SUMMARY

This study was carried out to investigate the effect of the limiting parameter of intensity of assertion on the operation of the congruity principle of Os-

good and Tannenbaum. Subjects first indicated their attitudes towards a set of sources and concepts chosen via a pretest and then two weeks later noted their attitude towards the same items in view of assertive combinations of differing degrees of intensity of assertion.

The results obtained support a curvilinear relationship between intensity of assertion and concept-shift of attitude. It would appear that greater intensities with which items are linked in an assertion are accompanied by greater attitude shift up to a point beyond which increased intensities of assertion do not produce still greater attitude shift. Possible interpretations for this reduced effect are formulated in terms of a possible contiguity or credulity effect.

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REFERENCE SCALE AND PLACEMENT OF ITEMS WITH THE OWN CATEGORIES TECHNIQUE*

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A. INTRODUCTION

Various experiments have reported systematic variations in judgments of verbal statements on controversial social issues made with the method of equal-appearing intervals by subjects (Ss) with differing attitudes toward the item content (2, 3, 4, 7, 8, 11). Hovland and Sherif (4, 6) demonstrated that Ss with widely divergent stands concerning the social position of Negroes judged certain items on that issue differently, in particular the so-called "neutral" items (*cf.*, 1). In a survey of the literature, Webb (11) concluded that under certain conditions the judgment of items under equal-appearing intervals procedure is affected by strong attitudes of the judges. More recently, Torgerson (9, p. 424) commented that variability of judgment is greatest in precisely those areas where judgment scales most frequently and routinely are used for measurement purposes: *viz.*, the investigation of personality traits, attitudes, and preferences. Yet, he continued, comparatively little research in these areas specifies the functional relationships producing such variability.

The present analysis concerns certain formal characteristics of the categorizations by Ss who were publicly identified as representing differing stands on the issue: *viz.*, the number of categories used; and the frequency of accepting, rejecting or remaining noncommittal on the definitions presented for judgment. Prior research results prompted Es to predict that under the stated conditions of judgment:

1. Ss upholding extreme positions on the issue will tend to use fewer categories than will the less ego-involved, unselected Ss (*i.e.*, ego-involved Ss will tend "to see things in terms of black and white").

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¹ Persons in various institutions helped in carrying out this study. The authors are especially indebted to Dr. Carolyn W. Sherif, Professor H. A. Bullock, Dr. Albert T. Milam, Dan Eddy, Jerry Jordan, William Maesen, La Vergne Gill, and Barbara Reid. The research was conducted as a unit of the research program of the Institute of Group Relations, The University of Oklahoma, while Muzafer Sherif, currently Director, Psychosocial Studies Program, Penn. State U., was Director and Lawrence La Fave was on the research staff.

2. Ego-involved Ss upholding an extreme position will tend to reject more items than they accept, while Ss less involved in an issue will accept as many or more items than they reject. In other words, the relative sizes of the latitudes of acceptance and rejection will differ in the predicted directions for ego-involved and less involved Ss (i.e., ego-involved Ss will tend to "see" more "black" than "white").

3. Given the opportunity to remain noncommittal as to acceptance or rejection of items, unselected Ss will more frequently refrain from either acceptance or rejection of items than will ego-involved Ss with extreme stands.

4. The more ambiguous definitions will be displaced further as a function of the attitude of the S than will statements clearly defining a position on the issue.

B. METHOD

1. Subjects

A total of 317 Ss participated in the experiment—216 males, 89 females, and 12 who did not report their sex. These Ss were partitioned into three subsets: (a) 95 Negroes from a state Negro university in the Southwest; (b) 144 white Ss from various lower-division classes either in a state or private university in the Southwest; and (c) 78 male Ss from chapters of a southern fraternity at three universities (two state and one private) in the Southwest. Unselected Ss consisted of 105 males, 33 females, and six unreported. For Negro classes the figures were 33, 56, and six, respectively. The median age for all Ss was 20.0 years.

The Negro Ss attending an all Negro university in a southern city (which maintained a completely segregated public school system) represent the highly ego-involved subject classification in the study.

The white Ss from classes are heterogeneous and represent various shades of opinion on the issue. They are considered least ego-involved of the three subject classifications.

The fraternity chosen was one whose chapters are mainly located in the South and is known for its adherence to southern traditions. Therefore, members who took part in this experiment are considered more ego-involved than unselected white Ss, but less so than Negroes.

2. Procedure

The 25 definition slips used in this experiment were selected from 35 employed in a pretest (5). Q values and medians were computed for these original 35 slips. This set of 25 slips was partitioned into five subsets (ordered along the

integration-segregation dimension) of five slips each. Which subset each of the 25 slips was assigned to was determined by the median value of that slip. The five subsets were Very Integrationist, Integrationist, Moderate, Segregationist, and Very Segregationist.

Sample slips from each of the five subsets read as follows:

SI, Very Integrationist: "The man who insists that discrimination against the Negro is contrary to every ideal which made this country great."

SII, Integrationist: "The person who wants integration of whites and Negroes to proceed at a reasonable pace."

SIII, Moderate: "A man who does not mind eating in the same restaurant as Negroes do as long as they do not sit at his table."

SIV, Segregationist: "The person who feels the present pace of integration of white and Negro students is too rapid for the good of our schools."

SV, Very Segregationist: "The individual who would prevent Negroes from voting."

First, Ss were asked to fill out an information sheet which called for such standard information as age, sex, school, residence, educational level, and so on. To insure anonymity, Ss were not required to write their names.

Next, Ss were asked to sort the definitions into piles. "These definitions," Ss were told, "all deal with the issue of integration-segregation in Negro-white relations." Before sorting, however, Ss were asked to become familiar with all the definitions by quickly reading them. Ss were then instructed to place *all* those definitions that "seem very integrationist on the issue of Negro-white race relations" into Pile 1. "Next to this pile," Ss were further informed, "place the definitions which seem next most integrationist, and so on, so that your last pile will consist of those definitions that represent very segregationist definitions in Negro-white relations." In brief, the "own category" procedure was used.

Having sorted all the slips into piles, Ss were then asked to label the piles of definitions they found "most acceptable" and "most objectionable." Ss were told that if any remaining piles seemed either acceptable or objectionable to label them thus. This procedure allowed Ss who used more than two piles to leave some piles unlabeled, if they chose. These unlabeled piles were designated "noncommittal."

Last, Ss were asked to indicate their own position on a graphic scale ranging from a "Very Integrationist" to a "Very Segregationist" position, and to write "a brief statement indicating what seems to you the correct position on the integration-segregation issue."

C. RESULTS

Since the present experiment concerns typical categorizations by Ss with differing ego-involvements in an issue, the analysis compares the frequencies with which predicted characteristics actually occurred for each of the three subsets of Ss.

If the first hypothesis be supported, unselected Ss should more frequently use a large number of categories in sorting the definitions than should either southern fraternity members or Negro Ss. To test it, Ss were dichotomized according to whether or not they used five or more categories. A trend is revealed in this direction. Whereas 36 per cent of the unselected Ss used five or more categories, only 23 per cent of southern fraternity Ss and 7 per cent of Negro Ss employed as many as five categories. In view of the large and significant χ^2 value for main effects, separate comparisons were made between unselected Ss and Negro Ss, unselected Ss and fraternity Ss, and fraternity Ss and Negro Ss. All χ^2 values are significant: $p < .025$ for unselected and fraternity Ss and $p < .005$ or less for all other comparisons (one-tailed tests). Any evaluation of the strength of the trend must consider that the unselected Ss and fraternity Ss were by no means homogeneous in expressed stand on the issue. The Negro Ss were most homogeneous in stand and ego-involvement, and here the trend is most clear-cut. In fact, fully 68.6 per cent of Negro Ss used three or fewer categories, while only one Negro S used as many as six.

The second hypothesis concerns the relative sizes of the latitudes of acceptance and rejection. To test it, Ss were dichotomized according to whether the number of items they placed in the union of categories labeled "most acceptable" and "acceptable" equalled or exceeded the number of items placed in "objectionable" categories; or, if the number of acceptable items was smaller than the number of objectionable. The results reveal that the latitudes of acceptance of unselected Ss are more frequently equal to or larger than their latitudes of rejection. On the other hand, fraternity Ss, and especially Negro Ss, show the reverse tendency. Over 87 per cent of Negro Ss and 59 per cent of fraternity Ss placed fewer items in categories they indicated acceptable than in those they labeled objectionable. Comparisons between all pairs of subject groupings also were significant ($p < .001$).

Hypothesis 3 compares Ss' placement of items into categories which they neither accept nor reject: i.e., noncommittal placements. The prediction is that less ego-involved, unselected Ss would more often have noncommittal placements than either Negro or southern fraternity Ss. To test it, Ss were dichotomized according to whether or not they employed any noncommittal place-

ments. While 41.7 per cent of the unselected *Ss* used one or more unlabeled categories, only 30.7 per cent of fraternity *Ss* and 29.5 per cent of Negro *Ss* employed such categories. Interestingly, relative frequencies of noncommittal placements for Negro *Ss* and fraternity *Ss* are similar, both differing from the frequency for unselected *Ss*. The trend is both consistent with expectations and significant ($p < .05$).

A test of the fourth hypothesis required determination of the median and *Q* values for each of the 25 items. Because the "own categories" procedure was employed, a conversion formula was needed to generate a common scale to compare the sortings of *Ss* using different numbers of categories. If p equals the pile in which the i th item is placed by S_j , and k the number of piles or categories used by the j th *S*, the scale value (v) of item i for the j th *S* is given by $v_{ij} = 100p/(k + 1)$, where the coefficient (100) is used simply to eliminate decimals.

In this formula, $p = 1$ if the j th *S* assigns item i to his "Very Integrationist" category; $p = 2$ if *S* places this item under his second most integrationist category, and so on. If *S* categorizes item i under his most segregationist pile, then $p = k$. For example, if S_j places item i in his second most integrationist of five piles, then $v_{ij} = 200/6 = 33$. The median for item i is simply its middle v , with integrationist items having low medians and segregationist high. To test Hypothesis 4, items were dichotomized in terms of their medians. With one exception, items with moderate medians (within the closed interval 40-60) had higher *Q* values than items with extreme medians. Thus, displacements of the moderate items (which were more ambiguous though not necessarily "neutral") were consistent with Hypothesis 4.

D. DISCUSSION

The trends in the foregoing analysis support the hypotheses statistically: the third at the .05 level, and the other three at .001 (on one-tailed tests). However, to evaluate the theoretic significance of the trends, more must be known about the three samples. The Negro *Ss* possess the most homogeneous background characteristics (including the stand on the issue). That these Negro *Ss* were highly ego-involved in a strong integrationist position is indicated by *Es'* observations of *Ss'* university, *Ss'* self ratings, written comments, and behavior in the judging situation. Strong support for the main hypotheses is given by *Ss'* categorizations which display, with few exceptions, the predicted characteristics. The trends for extremist white *Ss* are also in the predicted direction.

The manner in which the Negro *Ss* categorized reflects their intense ego-involvement in an extreme position. The significance of such categorizing is fur-

ther indicated by a specific case in the pilot study: One week before a particular Negro *S* was to appear, *Es* were informed that his Negro peers called him "Uncle Tom." *Es* predicted that, unlike other Negro *Ss*, he would use both a large number of categories and be noncommittal on many items. This Negro *S* used eight categories (no other Negro *S* more than six).

The present experiment, in at least two important ways, apparently helps answer criticisms of the one by Sherif and Hovland. First, Sherif and Hovland did not employ an anti-Negro group of *Ss* selected *a priori*. Consequently, some critics might argue that certain Sherif and Hovland hypotheses were substantiated for the wrong reasons. For instance, why did the pro-Negro Negro *Ss* typically use fewer piles than did moderate white *Ss*? Perhaps because the former were more culturally deprived (less educated), instead of more ego-involved, than these white *Ss*. This "educational" hypothesis seems more difficult to maintain as the result of the La Fave and Sherif findings, since anti-Negro whites also used fewer categories than did white moderate *Ss*. (Of course both experiments attempted to control the educational variable by using undergraduate *Ss* in each group. Since one might contend that subtle educational differences between the groups exist, the La Fave and Sherif results seem reassuring to the ego-involvement hypothesis.)

A second criticism of the Sherif and Hovland experiment also seems counteracted by the present study. Upshaw (10, pp. 93 and 96) believes Sherif and Hovland obtained their predicted displacement effects because they employed out-of-range *Ss* relative to the range of scale values of the Hinckley items. Yet the present experiment also obtained displacements predicted and found by Sherif and Hovland. The *Ss* used in the present experiment could hardly have been "out-of-range," since items at both extremes were included, such as "A white person who would marry a Negro," and "The person who insists that the only good Negro is a dead Negro."

Neither unselected nor fraternity *Ss* were homogeneous with respect to either stands taken on or concerned with the issue. These were two of several difficulties in testing the hypotheses: i.e., neither all unselected *Ss* were moderates, nor were all southern fraternity *Ss* segregationists. The small number of items used—only 25—may represent a third condition that also weakened trends (both by reducing variability in number of categories employed and in distribution of items within these piles).

A fourth condition that probably attenuated the trend in the present experiment was that *Ss* were asked to sort the items along the integration-segregation dimension, whereas Sherif and Hovland requested *Ss* to sort on a pro-Negro-anti-Negro scale. The *Es* in the present experiment assumed the integrationist

end to be pro-Negro and the segregationist end anti-Negro. But the correlation is obviously less than one-to-one. (For instance, Black Muslims are pro-Negro segregationists; some anti-Negro businessmen, in order to sell to Negroes, are willing to "integrate" with them; and so on.)

The findings of this experiment call to question certain established procedures in the investigation of attitudes and judgment of social issues. Because of these questions, the *Es* would suggest that adequate measures of attitude may be derived from characteristics of *S*'s categorization of pertinent items on a dimension apparently unrelated to his attitude, made spontaneously by *S*, and without instructions for imposed categories.

E. SUMMARY

The present experiment relates *Ss*' attitudes towards a controversial social issue to certain characteristic ways in which they place statements representing various positions on the issue. The underlying assumption is that *S*'s attitude will reflect itself in his placement of items when the procedures permit him his own categories for judgment.

Consistent with earlier results, predictions were made as follows:

1. Highly ego-involved *Ss* will use fewer categories than *Ss* only moderately concerned with the issue.
2. The latitudes of rejection of highly ego-involved *Ss* will be greater than their latitudes of acceptance, whereas the latitudes of acceptance of less involved *Ss* will more frequently equal or exceed their latitudes of rejection.
3. Given the opportunity, more *Ss* only moderately concerned with the issue will remain noncommittal on some items than will more highly ego-involved *Ss*.
4. The more ambiguous definitions (i.e., items with intermediate scale values) will be subject to greater displacement (i.e., will have higher *Q* values) than will the more clearly defined end items.

Results support all four hypotheses, the third suggestively and the others strongly, particularly if the heterogeneity of stands represented in the white samples be considered. Problems related to attitude measurement procedures and social judgment studies, and the rationale for developing assessment techniques based on indices of *S*'s categorizations were discussed.

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SOCIAL CONDITIONING IN THE MODIFICATION OF DOMINANCE HIERARCHY IN WHITE RATS*

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A. INTRODUCTION

Ginsburg and Allee (3) demonstrated the possibility of shifting (raising or lowering) a mouse's aggressiveness as a result of subjecting it to a series of victories or defeats by another mouse from the least or most warlike strain. Seward (5), who conducted what is probably the most extensive investigation on aggressive behavior among white rats, also dealt with the question of the applicability of conditioning principles to fighting behavior (6). In his experiments (5) he experienced difficulty in establishing a stable dominance hierarchy when using fighting as an index of aggressive behavior. Among the problems involved with this index appears to be the fact that the amount of fighting rapidly diminished, and scoring was difficult. In later experiments Seward (6) selected dominant and submissive rats; and by exposing experimental animals to them he was able to demonstrate a decrease in aggressive behavior on the part of the defeated animal, as well as some increased aggressiveness after an experimental animal had experienced victories over a more submissive one. In general, Seward's work seemed to suggest the possibility of the use of conditioning principles for explaining certain modifications of social behavior. This suggestion was further supported by Tsai (7), who observed that the behavior of certain rats paired in his dominance-submission apparatus was affected by the direction of a light stimulus: e.g., they would alternately win or lose depending on whether they moved away from or toward a window.

Seward found that the mean frequency of bouts where fighting occurred was less than 50 per cent, so that most of his ratings had to be subjectively determined by using a scale of aggressive behavior developed by Davis (2) and modified by Hall and Klein (4). Bruce's (1) method of observation made use of an eating and drinking situation that allowed only one rat to get hold of the incentive at a time. He showed evidence of a dominance pattern, but evidently did not attempt to establish a hierarchy of more than two rats. More

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recently Tsai developed an apparatus involving rats meeting and pushing against each other in a restricted alley. Using this apparatus he has succeeded in establishing a stable hierarchy among as many as nine white rats in a combined group. It appears that this apparatus may provide an objective and, therefore, better method for the investigation of the effects of social conditioning upon the modification of dominance hierarchy in rats; and such a method is desirable inasmuch as the whole problem suggested by Ginsburg and Allee in mice, as well as by Seward and Tsai in rats, is still in need of a thorough and rigorous experimental investigation.

The general purpose of the present study was to determine the applicability of the principles of conditioning to the modification of social behavior; and, specifically, this experiment was designed to study changes in the dominance hierarchy among white rats as results of social conditioning. If it is postulated (a) that repeated defeats by a more dominant animal produce a conditioned submissive or avoidance reaction and (b) that repeated victories over a more submissive animal build up a conditioned dominant or aggressive reaction, then the dominance hierarchy of two test animals should be significantly altered or actually reversed as results of such differential methods of social conditioning.

B. METHOD

1. *Apparatus*

The Tsai Dominance-submission Apparatus consists of principally an enclosed alley $2\frac{1}{4} \times 2\frac{1}{4}$ inches in cross-section and 37 inches long between two open end-boxes, each 12 inches long, 7 inches wide, and 7 inches high. The size of the alley could be adjusted by insertion of lath-like strips so that only one rat could go through from either end-box as a starting point to the opposite one as the goal. A solid wooden sluice-like gate was located midway in the alley and could be removed vertically to allow the rat a clear passage from one end-box to the other. The apparatus was painted a uniform gray. It was placed on a table in the laboratory which was a room separate from the rats' living quarters. Light in the experimental area was provided by a 75-watt bulb suspended 12 inches below the center of the apparatus table and shielded so that the major source of light was that reflected from the wall opposite the experimenter. An apparently uniform illumination from either end of the apparatus was thus presented.

2. *Subjects*

Thirty-six naive, male white rats from the Albino Farms, Red Bank, New Jersey, were randomly divided into nine groups of four each. Groups A, B, C,

D, and E were used for Part I of the experiment which was started when the animals were 120 days old. Part II was a replication of Part I, using groups F, G, H, and I when the animals were two weeks older. The animals lived in individual cages at all times except when they were actually in the dominance-submission apparatus during the preliminary and experimental sessions.

3. *Preliminary Training*

Ten days of preliminary training consisted of establishing a water deprivation schedule among the animals, their familiarization with the apparatus, and their learning to run through the alley to the goal at the opposite end-box. Subjects were rewarded only in the opposite goal box after each run, but not in the starting box after they had retreated. The incentive for building up this forward-going tendency was a small amount of drinking water, after 23 hours of deprivation, placed by means of a medicine dropper into a dish in each goal box. The animals were allowed to feed *ad lib* in their home cages. By the end of such preliminary training, each rat was able to make daily eight uninterrupted runs and four runs with a one- to two-second delay at the gate in the middle of the alley. Preliminary training was the same for the subjects in both parts of the experiment.

4. *Establishment of Hierarchy*

Each animal was paired with every other in his group of four in a predetermined random order. Subjects were introduced into the apparatus in a counter-balanced order to equalize the effects of any extraneous factors. The experimenter put one rat into each end-box at the same time, with the gate closed at the middle of the alley. When both animals' noses were touching the gate, it was opened up vertically. The experimenter recorded as winning the animal which pushed back his opponent out of the alley. The loser was then lifted out of the way to allow the winner free access to the water dish, then the loser was allowed to run through the alley uninterrupted to the opposite goal box for his water. Both animals were allowed to remain in their respective goal boxes for two to three seconds to finish drinking the water, then returned to their cages to await the next match. This hierarchy schedule lasted for seven days, with 12 trials a day for each group.

5. *Test of Hierarchy*

As a preconditioned reference, scores on the last two days of the hierarchy schedule were noted. These were later compared with a hierarchy retest conducted after the last postconditioning test.

6. *Test of 2/3 Rank*

As determined by the dominance hierarchy, the two middle ranking animals (No. 2 and No. 3) of each group were paired for two days, eight trials per day, to verify their rank order when no opportunity was given for the influence of either the most dominant or the most submissive animal during the session. This test was taken as the final measure of the relative ranks of the two test animals and served as a basis for comparison with their later scores to reflect any effect of the conditioning schedule. To equalize the number of trials for all animals, No. 1 and No. 4 rats were also paired on a similar schedule.

7. *Conditioning Schedule*

Since the relationship of animals No. 2 and No. 3 had now been established by the number of wins of No. 2 over No. 3, the next step was to subject No. 2 to a series of defeats and No. 3 to a series of wins. This was accomplished during the conditioning phase. For a period of 10 days in a total of 100 trials, No. 1 and No. 2 were paired, on the assumption that No. 1 would consistently beat No. 2. In a like manner, No. 3 was paired with No. 4 to give No. 3 the experience of a series of wins.

8. *Retest of 2/3 Rank*

During this phase animals No. 2 and No. 3 were again paired. Any change in the win-loss ratio from the first test would presumably be a result of conditioning during the past 100 trials. This test was conducted in the same manner as the original test. Animals No. 2 and No. 3 were paired for two days, eight trials per day. Animals No. 1 and No. 4 were paired in a similar manner to maintain equality of trials.

9. *Retest of Original Hierarchy*

As a recheck, all animals in each group were paired for two days on the same schedule as used in the original establishment of the hierarchy. This made it possible to compare the relative hierarchy status of rats No. 2 and No. 3 within the whole group of four animals before and after the conditioning schedule (and the two test series).

C. RESULTS AND DISCUSSION

Since Part II was a replication of Part I, data from both are combined. A summary of the data is shown in Figure 1. All the data necessary to show any effect of conditioning can be obtained from either of the two test animals, but

the number of wins by rat No. 2 over No. 3 before and after conditioning shows the effect most conclusively.

The experimental hypothesis predicts that No. 2's score will go down and No. 3's score will go up as results of the respective social conditioning of repeated defeats and victories. A reduction in No. 2's score would reflect such changes. As the test data indicate, the No. 2/No. 3 ratio showed a decrease in

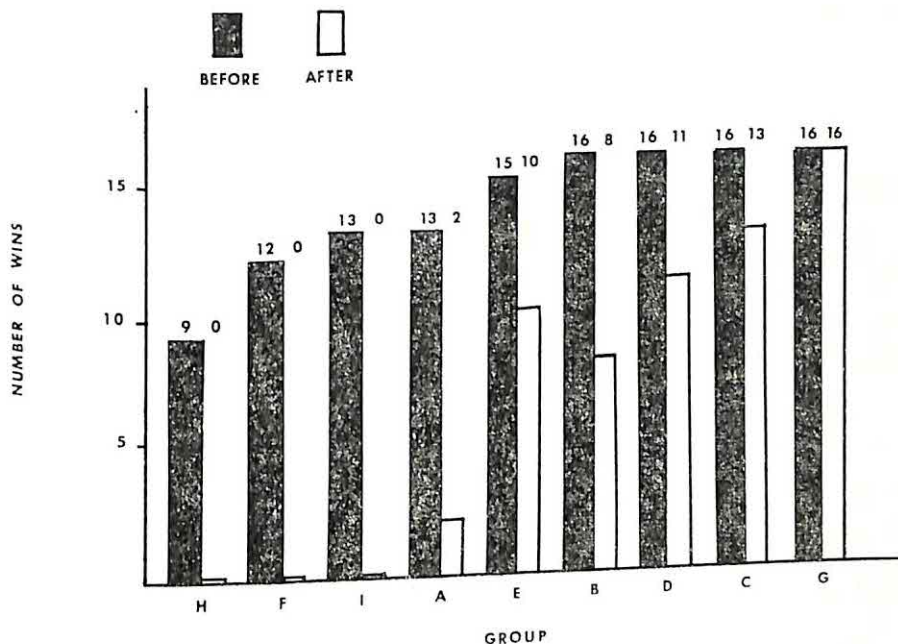


FIGURE 1
WINS BY RAT NO. 2 OVER NO. 3 BEFORE AND AFTER CONDITIONING

eight out of the nine groups on the second test. These results were analyzed by using the Wilcoxon Matched-Pairs Signed-Ranks Test for a one-tailed test (H_1 predicts the direction of change). The decrease is significant with $p = .005$ (two-tailed test $p = .01$). In the one exception, No. 2 and No. 3 were as far apart as possible in their original hierarchy status and during the conditioning process No. 3 was the only one that was defeated by No. 4 more often than the other way around.

The results strongly support the hypothesis that repeated exposure to defeats may condition submissive behavior, while repeated exposure to wins may produce conditioned dominance. By using the Tsai apparatus, the investigators were able to establish a stable dominance hierarchy in the first place; and by

holding the factor of practice constant between the experimental and the control animals, they were able to compare the hierarchies, for each group, before and after the conditioning schedule.

The second hierarchy series suggests the principle of extinction in operation. If the No. 2 animal is conditioned to be submissive by his defeats in matches with No. 1 and No. 3 during the conditioning and the test series, then opportunity for No. 2 to defeat No. 4, and at times No. 3, during the hierarchy retest may serve as a counterconditioning measure and help to extinguish the conditioned submissiveness. It is quite possible that a significant number of group hierarchies might eventually have re-established themselves at the pre-conditioning level. The data do not provide sufficient evidence for any clear test of this hypothesis. However, there were indications that No. 2 was less easily beaten by No. 3 as the number of postconditioning hierarchy trials increased.

The data justify the conclusion that the principle of conditioning is applicable to the modification of such complex social behavior pattern as the dominance-submission relationship.

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DOGMATISM AND AUTHORITARIANISM*¹

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A. INTRODUCTION

In 1956, Rokeach presented his concept of dogmatism as an alternative to the prevailing one of authoritarianism. It has been his contention that the F Scale is a measure of rightist authoritarianism, while the Dogmatism Scale taps general authoritarianism. Research conducted by Rokeach (6, 7), Rokeach and Fruchter (8), Fruchter, Rokeach and Novak (2), Barker (1), Plant (5), and Kerlinger and Rokeach (4) has provided varying degrees of support for Rokeach's position, but it is not yet fully established.

B. METHOD

The present study examined the relation between authoritarianism and dogmatism by analyzing dogmatism scores and responses to categorical and probabilistic authoritarianism items and reversals. Figure 1 illustrates the typology of response types. The response types were identified according to the criteria specified in Table 1.

The instrument [see Hanson (3, pp. 60-62)] consisted of items from the Stereopathy-Acquiescence (S-A) Scales developed by Stern *et al.* (9, 10), interspersed with the items of the Rokeach Dogmatism Scale (form E). S-A items were used to construct the Categorical (CA) and Qualified (QA) Authoritarianism Scales, as well as the Categorical (CN) and Qualified (QN) Non-Authoritarianism Scales. Additionally, a General Authoritarianism Scale (GA) was formed by combining the categorical and qualified authoritarianism items, while a General Non-Authoritarianism Scale (GN) consisted of all categorical and qualified nonauthoritarianism items.

It was hypothesized that, in terms of dogmatism, $R < Aq$ or $Nq < Q < A$ or $N < IA$ or $IN < I$; more specifically, that subjects of the various response

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types would exhibit dogmatism scores as follows: (a) $Aq > R$; (b) $Nq > R$; (c) $Q > Aq, Nq$ or R ; (d) $A > Q, Aq, Nq$ or R ; (e) $N > Q, Aq, Nq$ or R ; (f) $IA > A, N, Q, Aq, Nq$ or R ; (g) $IN > A, N, Q, Aq, Nq$ or R ; (h) $I > IA, IN, A, N, Q, Aq, Nq$ or R .

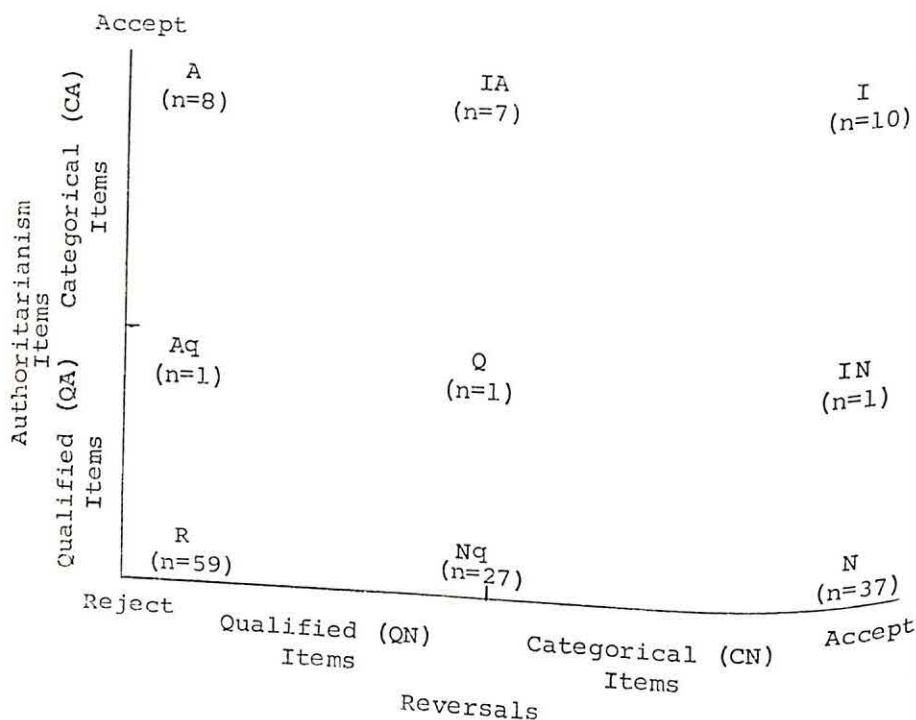


FIGURE 1

TPOLOGY AND FREQUENCY OF RESPONSE TYPES

A = Authoritarian, N = Non-Authoritarian, Aq = Qualified Authoritarian, Nq = Qualified Non-Authoritarian, R = Rational, Q = Qualifier, I = Irrational, IA = Irrational Authoritarian, and IN = Irrational Non-Authoritarian response type.

The scales described above were administered to students in the predominantly sophomore introductory sociology course at Syracuse University. They were also given to students, virtually all freshmen, in five small discussion sections of the introductory public affairs course at the same university. Complete and usable response sheets were obtained from 301 students, of which 151 were categorizable as to response type (see Table 1). All testing was performed by the writer during November and December, 1965. The scales were disguised as a public opinion questionnaire and the anonymity of responses was stressed in order to elicit more valid results.

TABLE 1
CRITERIA FOR IDENTIFYING RESPONSE TYPES

Response type	Scale score			
	Authoritarianism scales		Non-Authoritarianism scales	
	Categorical scale (CA)	Qualified scale (QA)	Categorical scale (CN)	Qualified scale (QN)
R (Rational)	Low	Low	Low	Low
I (Irrational)	High	High	High	High
Q (Qualifier)	Low	Low	Low	High
A (Authoritarian)	High	High	Low	Low
N (Non-Authoritarian)	Low	Low	High	High
Aq (Qualified Authoritarian)	Low	High	Low	Low
Nq (Qualified Non-Authoritarian)	Low	Low	Low	High
IA (Irrational Authoritarian)	High	High	Low	High
IN (Irrational Non-Authoritarian)	Low	High	High	High

Note: A high scale score is one which falls above the mean score of all the subjects used in this study, while a low score falls below it.

C. RESULTS

A distinct pattern is seen when the component scales are ordered according to their degree of correlation with the Dogmatism Scale. In terms of correlation with that scale, $GA (.64) > CA (.58) > QA (.43) > GN (.35) > CN (.32) > QN (.30)$. This pattern suggests that the generality variable (categorical *versus* qualified statements) does not *per se* explain the correlations, and is thus consistent with earlier research reported by Stern *et al.* (10). A second characteristic to be noted is the consistently higher correlations of the authoritarianism scales (QA , CA , and GA) with the Dogmatism Scale.

Subjects were categorized as to response type according to the criteria in Table 1. Of the 301 subjects, 151 fell into the categories in the frequencies indicated in Figure 1. An analysis of the dogmatism score variance among different response types with an n greater than one yielded the results presented in Table 2.

Among analyses in which one response type was represented by an n of only one (see Figure 1), variance reached a significant level in only three cases. These were $Q-Nq$, $IN-q$, and $IN-Nq$, each of which was significant at the .05 level of confidence. The variance of $Q-R$ can be considered nearly significant, having reached a confidence level of .10. Virtually all nonsignificant variances involved one of the three response types represented by only one subject, a finding that strengthens confidence in the validity of the hypotheses.

These data permit a testing of the original hypotheses. Hypotheses 1 and 2 were not supported, while hypotheses 3, 4, 5, 6, 7, and 8 were partially supported (see Table 2).

D. DISCUSSION

It will be remembered that the three authoritarianism scales (QA , CA , GA) exhibited consistently higher correlations with the Dogmatism Scale than did the three nonauthoritarianism scales (QN , CN , GN). While there was no significant variation in dogmatism scores between As and Ns , between Aqs and Nqs , between IAs and INs , or between As , Aqs , and IAs on one hand and Ns , Nqs , and INs on the other, the mean dogmatism score of the authoritarian types (As , Aqs , and IAs) was nevertheless 10.56 score points (of a possible 200) greater than that of the nonauthoritarian types (Ns , Nqs , and INs).

These findings are consistent with those reported by Rokeach, who, by correlating dogmatism with Political-Economic Conservatism Scale scores, found that "Even though the correlations between dogmatism and conservatism are quite negligible, they are consistently positive. The chances are better than

even that a closed-minded person will be conservative rather than liberal in his politics" (7, p. 122).

Rokeach has argued, as earlier indicated, that the Dogmatism Scale is a measure of general authoritarianism of both the right and the left. To the

TABLE 2
DOGMATISM SCORE VARIANCE AMONG RESPONSE TYPES

Group	df	F
Aq-R	58	1.2 ^b
Nq-R	84	.1
Q-Aq	—	— ^a
Q-Nq	26	4.2* ^b
Q-R	58	3.8 ^b
A-Q	7	.4 ^b
A-Aq	7	.0 ^b
A-Nq	33	7.6**
A-R	65	9.0**
N-Q	36	.8 ^b
N-Aq	36	.0 ^b
N-Nq	62	4.0*
N-R	94	9.0**
IA-A	13	2.1
IA-N	42	4.9*
IA-Q	6	.0 ^b
IA-Aq	6	2.4 ^b
IA-Nq	32	25.1**
IA-R	64	23.4**
IN-A	7	1.0 ^b
IN-N	36	1.6 ^b
IN-Q	—	— ^a
IN-Aq	—	— ^a
IN-Nq	26	6.6* ^b
IN-R	58	5.8* ^b
I-IA	15	5.6*
I-IA	9	.3 ^b
I-IN	9	10.6**
I-A	16	30.6**
I-N	45	.7 ^b
I-Q	9	1.7 ^b
I-Aq	9	6.2*
I-Nq	35	84.1**
I-R	67	.8
A-N	43	

^a Each response type is represented by only one subject.

^b One of the two response types is represented by only one subject.

* Significant at the .05 level.

** Significant at the .01 level.

extent that there was no significant difference in dogmatism between Authoritarians and Non-Authoritarians examined in this study, his contention is supported. It should also be noted that two different methods of item analysis provide additional evidence that the Dogmatism Scale taps general authori-

tarianism, inasmuch as the responses of both *As* and *Ns* to the dogmatism items are indistinguishable [see Hanson (3, pp. 54-55)].

On the other hand, the correlations between all authoritarianism scales (*QA*, *CA*, *GA*) and dogmatism were higher than those of any of the nonauthoritarianism scales (*QN*, *CN*, *GN*) and dogmatism. It would appear then that, to some extent at least, there is an inherent relationship between authoritarianism of the right and dogmatism, which tends to negate the suggestion that *As* and *Ns* are equally dogmatic.

E. SUMMARY

Tested in this study were hypotheses relevant to Rokeach's position that dogmatism, as measured, taps general authoritarianism, whereas authoritarianism, as measured, taps only rightist authoritarianism. The testing instrument, disguised as a public opinion questionnaire, consisted of categorical and qualified authoritarianism items and reversals from the Stereopathy-Acquiescence Scales interspersed with Dogmatism Scale items. The subjects were 301 university students. While there was no significant difference in dogmatism between Authoritarians (*As*) and Non-Authoritarians (*Ns*), authoritarian responses were more highly correlated with dogmatism than were nonauthoritarian, regardless of the quality of response (categorical or qualified). The data support Rokeach's hypothesis that the Dogmatism Scale taps general authoritarianism, but tends to negate the suggestion that *As* and *Ns* are equally dogmatic.

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MOTIVATION TO TELL THE TRUTH VS. SOCIAL INFLUENCES*

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A. INTRODUCTION

There are many situations in which people feel that it is their duty to tell the truth and not to be swayed by personal or social pressures to ignore the evidence. Science and jurisprudence seem to rest on the assumption that evidence can be judged truthfully. Yet studies of social influences on judgment and perception indicate that people, Americans, in particular, tend to give judgments that are nonveridical in terms of the objective evidence given to them (1, 2, 3, 4). Perhaps they make veridical judgments in certain situations in daily life because they have been explicitly motivated to tell the truth. Would the introduction of such motivation in an experiment on social influences on judgment lead to veridical judgments? It is with this question that the present research deals.

B. PROCEDURE AND SUBJECTS

The senior author gave two of his general psychology classes three lectures on the methodology and aims of science. The lectures stressed that science seeks truth and requires researchers to present the facts "as they see them" and not to be swayed by personal or social pressures. At the conclusion of the lectures, the students were told that in order to test their commitment to the scientific ideal of telling the truth, they would receive a laboratory quiz, which constituted part of a new intelligence test. Their responses would be used to help standardize the intelligence test. "It is important that each of you report exactly what you see or else the intelligence test will be invalid." The laboratory quiz would give the student a 10 per cent grade increment on the next class test if he reported truthfully what he saw and wrote a report describing his experience during the quiz. In one class a sheet of paper was then passed out on which the students selected the time for their laboratory quiz. This

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sheet was returned to the graduate assistant who conducted the experiment. In another class that had received the same lecture and instructions, the students were further admonished to remember that the quiz was to test their ability to tell the truth regardless of pressure not to do so. The graduate student who was to test them was introduced to them and he personally made the appointment with each student. The former class will be referred to as the lecture group, and the latter as the lecture plus warning group.

The stimulus material consisted of five cards (4), each of which contained a drawing of a small square with two line segments, labeled 1 and 2, jutting out from the square at different angles. One of the line segments was one inch long in every card, and the other was $15/16$, $14/16$, $12/16$, $10/16$, and $8/16$ of an inch in the first through the fifth card, respectively. The experiment was administered to groups of two or four college students. Only one member of each group was a naive *S*, while the others were the experimenter's preinstructed confederates. The *S* responded to each card after overhearing the other members (confederates) respond to it. Justification for this order of presentation was that *S* had been the last to enter the room.

The experiment was introduced in the following manner:

"This test, which tests visual acuity, is part of a new intelligence test being standardized by the psychology department. It involves selecting the shorter of two lines of a drawing on a card. I will pass around one card at a time. Look at each card to note which of the two numbered lines jutting out of the square on the card is the shorter one. Do not count the sides of the square as part of the lines. Please state your answer before you pass it on to the next person. Say it out loud so that I can hear it. Remember you are to tell me which of the two lines, No. 1 or No. 2, is the shorter one."

In the manner described, each card was judged first by the confederate (confederates) and then by *S*. When the five cards had been judged, the experimenter looked at the scoring key and told each person his score. He then said that the test would be repeated in order to see if everyone could get 100 per cent. The cards were presented two more times, with a score announced each time. At the conclusion of the third presentation, the experimenter left the room and a confederate asked, "What is it all about?" in an attempt to obtain *S*'s reactions. In a few minutes, the experimenter returned and the confederate (confederates) left. Finally, the cards were administered to *S* alone, without any scoring, and he was questioned concerning his answers and his reactions to the experiment.

In one series of experiments, each confederate chose the longer line but said that it was the shorter one. In scoring their responses, the experimenter

announced that the confederate had 100 per cent, and he gave *S* a score based on the number of times that he had agreed with the confederate's responses. In another series of experiments, each confederate chose correctly: that is, selected the shorter line and said that it was shorter. In scoring their responses, the experimenter said that the confederate had zero per cent, and he gave *S* a score based on the number of times that he had disagreed with the confederate. The former series of experiments, in which the confederate chose incorrectly and the experimenter confirmed (called correct) the incorrect response, is referred to as the confirming series. The latter series, in which the confederate chose correctly but the experimenter infirmed (called incorrect) the correct response, is called the infirming series. In each series there were four groups: (a) one confederate and lectures, (b) three confederates and lectures, (c) one confederate and lectures plus warning, and (d) three confederates and lectures plus warning.

There were 82 naive *Ss*, with 10 or 11 in each of the groups.

C. RESULTS

Table 1 presents the percentages of incorrect responses on the third presentation of the cards. For purposes of comparison, the table also gives the results obtained in previous experiments (4, 5, 6) with comparable college groups who were not motivated to tell the truth by lectures, warnings, or other means.

TABLE 1
PERCENTAGE OF INCORRECT RESPONSES

Experiments	N	Cards					Mean
		1	2	3	4	5	
Confirming incorrect answer	15	60	33	20	20	20	31
One confederate, no motivation	10	100	40	40	60	60	60
Three confederates, no motivation	10	80	50	50	50	50	56
One confederate and lectures	11	81	64	64	64	73	69
Three confederates and lectures							
One confederate, lectures	10	60	40	40	40	40	45
plus warning							
Three confederates, lectures	10	100	60	60	60	60	68
plus warning							
Infirming correct answer							
One confederate, no motivation	10	60	60	40	20	20	40
Three confederates, no motivation	10	60	60	0	20	20	32
One confederate and lectures	11	82	27	27	27	27	38
Three confederates and lectures	10	10	20	20	10	10	14
One confederate, lectures							
plus warning	10	50	0	0	0	0	10
Three confederates, lectures							
plus warning	10	10	10	10	10	10	10

The table does not present the results on the retrial with *S* alone; these were usually about the same as *S*'s results on the last (third) presentation when the confederate or confederates were present.

1. *Confirming Series*

The motivation to tell the truth was generally ineffective in the confirming series where the confederate (confederates) and the experimenter were opposed to the evidence. When tested with one confederate, the *Ss* that had the lectures made a larger percentage of incorrect responses on every card than did the unmotivated *Ss*; on the average, the difference was 25 per cent, which was statistically significant (at the .01 level of confidence, $t = 2.93$). None of the other differences in the confirming series attained statistical significance (at or better than the .05 level of confidence). However, the trend of results was in line with the result already cited. When tested with one confederate, the *Ss* who had the lectures plus warning made as large a percentage of incorrect responses on the first card (where there was the least difference in length between the two line segments, only 1/16 of an inch) and a larger percentage on each subsequent card than did the unmotivated *Ss*; on the average, they had 14 per cent more incorrect responses. When there were three confederates, the motivated *Ss*, whether they had the lectures or the lectures plus warning, had as many or more incorrect responses on four of the five cards (the exception being the first card) than did the unmotivated *Ss*, averaging 8 or 9 per cent more such responses. In short, in the confirming series, where all the social forces were opposed to the evidence, the motivation to tell the truth not only failed to work in the intended direction but, seemingly, worked in the opposite direction and fostered incorrect responses.

2. *Infirming Series*

However, the motivation seemed to influence in the intended direction in the infirming series where the confederate (confederates) supported the evidence while the experimenter was opposed to it. The *Ss* who had received the lectures and were tested with one confederate had a somewhat smaller percentage of incorrect responses than did the unmotivated *Ss* on the second and the third card, and, on the average, they had 2 per cent less. The results were more striking for the *Ss* who had received the lectures plus warning and were tested with one confederate. Table 1 shows that on the last four cards these *Ss* had no incorrect responses. On every card they had fewer incorrect responses than the unmotivated *Ss* and, on the average, they had 30 per cent less, a statistically significant

difference ($t = 3.74$). When there were three confederates, the Ss who had received the lectures, as well as those who had received the lectures plus warning, had fewer incorrect responses on four cards than the unmotivated Ss and, on the average, had 18 and 22 per cent less, respectively; both differences were statistically significant ($t = 2.17$ and 2.28). In short, the motivation to tell the truth was quite (although not completely) effective when a social force (confederate or confederates) was on the side of the truth while another social force (the experimenter) opposed it.

3. *Comparison Between the Confirming Series and the Infirmiting Series*

We turn now to comparison of a group in the confirming series with the corresponding group in the infirming series. When unmotivated Ss were tested with one confederate, the infirming procedure yielded as many or more incorrect responses than did the confirming procedure on every card and, on the average, it yielded 9 per cent more. For all other groups, however, the infirming procedure yielded fewer incorrect responses than did the confirming procedure. This direction held on every card except the first card for Ss who had the lectures and were tested with one confederate, and averaged 18 per cent. For Ss who had the lectures plus warning and were tested with one confederate, the infirming procedure yielded fewer incorrect responses on every card, with a mean difference of 35 per cent, which was statistically significant ($t = 4.25$). With three confederates, the infirming procedure yielded fewer incorrect responses for the unmotivated Ss on four cards (the exception being the second card) and averaged 28 per cent, which was statistically significant ($t = 3.11$). The differences were even more striking for the motivated groups. When there were three confederates, the infirming procedure resulted in fewer incorrect responses on every card and averaged 55 and 58 per cent less respectively for the Ss who had the lectures and lectures plus warning; these differences were of course statistically significant ($t = 6.93$ and 7.38).

In both the confirming and infirming series, the lectures plus warning were somewhat more effective in yielding correct responses than the lectures alone. In the confirming series, when Ss were tested with one confederate, the Ss with the lectures plus warning had fewer incorrect responses on every card than did the Ss with the lectures only; the average difference was 11 per cent. When Ss were tested with three confederates, the same direction of results held on the last four cards, but the average difference was only 1 per cent. In the infirming series, the Ss with the lectures plus warning had fewer incorrect responses on the last four cards than did the Ss with the lectures; and, on the average, had 28 per cent less when there was one confederate and 4 per cent less when there

were three confederates; the former difference was statistically significant ($t = 3.71$).

In both the confirming and infirming series, the majority of Ss in the motivated groups usually gave the same responses as those they overheard: that is, they tended to agree with the confederates. In the confirming series, 43 per cent of the unmotivated Ss and 61 per cent of the motivated Ss gave the overheard incorrect response. In the infirming series, 64 per cent of the unmotivated Ss and 81 per cent of the motivated Ss gave the overheard correct response. Table 1 shows that usually there was more agreement with the overheard response when there were three confederates than when there was one confederate. This was the case on every card in the confirming series regardless of whether the Ss were unmotivated or had the lectures or the lectures plus warning; the average differences between one confederate and three confederates were 29, 13, and 23 per cent respectively, the first and last difference attaining statistical significance ($t = 3.32$ and 2.40). Results were less consistent in the infirming series. For the unmotivated Ss, three confederates yielded more agreement with the overheard response on only one card (the third); and, on the average, yielded only 8 per cent more. For the Ss who received the lectures, three confederates yielded more agreement with the overheard response on every card than did one confederate; the mean difference was 24 per cent, which was statistically significant ($t = 2.84$). However, for the Ss who received the lectures plus warning, there was slightly less agreement on the last four cards when there were three confederates; and the mean results were the same with one or three confederates.

D. QUALITATIVE DATA

Content analysis of the comments Ss made during and immediately after the experiment and of the written protocols that they later submitted suggested that those who gave incorrect responses were more concerned with passing the test, whereas those who gave correct responses were more concerned with the evidence. For example, Ss who gave correct answers said, "You'll call me wrong but I'll report what I see," and "My eyes tell me that I'm right and your scoring key is wrong," and "I'll call them as I see them no matter what anyone else says." Ss seemed to focus more on the evidence and to take the experimenter's scoring of their responses less seriously when they overheard another's correct responses (in the infirming series). There they often challenged the experimenter, saying, "We are right. All of us looked at the card and gave the same answer," or words to this effect. In contrast, when the confederates

gave incorrect judgments, most Ss seemed less sure of themselves, seemed less comfortable in giving their responses, and were generally more concerned with their test scores. Some Ss seemed perplexed, confused, or embarrassed when they overheard incorrect responses or when they were scored as wrong. They asked the experimenter if he was sure that he wanted the shorter line selected. Some Ss voiced suspicion and referred to possible collusion between the confederates and the experimenter or said that they realized that the intent was to influence their choices or make them conform.

In their comments few Ss explicitly related the experiment to the lectures or the warning. This lack of a link was further corroborated when, several weeks after the experiment, the lecturer asked the classes why, despite the lectures and warnings, some of them had not told the truth in the laboratory quiz. Some Ss, more often those in the confirming series, said that they had forgotten the lectures and warning during the experiment. Was this a lie or a rationalization? There were protests when the lecturer announced that those who had given incorrect answers would not be allowed 10 credits on the next class test. A few Ss argued that credit should be allowed, since the lectures and warning were forgotten or since all they could think of during the experiment were ways of getting 100 per cent. Some added that they had thought that it was necessary to get 100 per cent on the laboratory quiz in order to earn credit on the class test. Certain Ss who had given correct answers said that when they were given a score of zero per cent, they thought that they had failed the laboratory quiz and that they lost the credit toward the class test. A number of Ss who had given incorrect responses claimed that they thought that they were telling the truth. Some explained that they suspected that a visual illusion was involved and that they therefore tried to see the lines as the others saw them or in a manner that would be scored as correct. Others claimed that they became unsure or confused about the task or thought that the trick was to realize that "shorter" meant "longer" on this test. Some said that, since there is no absolute truth, what is called shorter or what is called correct is determined by the group norms or by the scorer or scoring key.

In short, many Ss rationalized that they were telling the truth or that they were correct when they gave an objectively incorrect response. Moreover, the authors see that in the testing situation some Ss either forgot or reinterpreted the admonition to tell the truth and confounded being right in terms of the test score with being right in terms of the objective evidence. Apparently there were also various interpretations of what was required in order to earn credit toward the next class test.

E. DISCUSSION

It is now 30 years since Max Wertheimer, in his seminar at the New School for Social Research, pointed out that studies of social influences on perception and judgment tended to be one-sided insofar as they provided no objective evidence on which *S* could base his judgment. Since then, a fairly sizeable literature has developed, stimulated by the investigations of Asch (1) and Crutchfield (3), showing that the introduction of evidence does not necessarily lead to responses based on it; under certain conditions, people can be made to agree with another's incorrect response or to disagree with another's correct response and, more generally, to conform to social pressures which are opposed to the object of judgment. Some of the discussions hypothesize that such results are not necessarily brought about by imitation or by emotional and noncognitive factors, but may have a rational, cognitive basis, and, moreover, that social reality is as real and objective as the so-called objective evidence presented for judgment (2, 7, 8, 9); thus there is a tendency to lend a Gestalt flavor to the interpretation of responses that conform to social pressures. Nonetheless, whatever may be the basis for such responses, there remains the problem, important for both practical and theoretical reasons, of what can be done to make people adhere to the truth in the face of opposing social pressures.

That our efforts were unsuccessful in the confirming series fits the trend of results of experiments on social influences upon American subjects and testifies to the strength of social pressures when they are all opposed to the evidence. What may have contributed to the incorrect responses (which were even more frequent for motivated than for unmotivated *Ss*) was the fact that the experiment was introduced as a test, was scored as a test, and was linked to credits toward a class test. These factors may have helped to give rise to a test tension atmosphere during the experiment. In short, the effects of the lectures and warning may have been vitiated in the confirming series both by the authors' having made a scored test out of the experiment and by their counting the experience in the laboratory quiz toward the next class test. It would be of interest in future research to change one or another or both of these procedures.

F. SUMMARY

Would motivating *Ss* to tell the truth prior to the experiment reduce the efficiency of social factors designed to yield incorrect judgments? The 82 college *Ss* were motivated by being given three lectures on the aims and methodology of science (and half of them also received a warning to tell the truth) and then being told that they would be given a laboratory quiz of their commit-

ment to tell the truth, regardless of personal and social forces that sought to deflect them from the evidence. Experiments with judgments of the length of line segments were then conducted with one confederate or three confederates giving preinstructed responses before *S* responded. When the social forces—the confederate(s) and the experimenter—were counter to the evidence, social influences were at least as large as those obtained without the lectures or warning. *Ss* seemingly reacted to the immediacy of the situation and failed to relate it to the lectures or warning. However, when the confederate or confederates were in line with the evidence, even though the experimenter was opposed to it, the motivation apparently decreased incorrect answers.

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COGNITIVE AND AFFECTIVE COMPONENTS OF SOUTHERN NEGRO STUDENTS' ATTITUDE TOWARD ACADEMIC INTEGRATION*

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A. PROBLEM

Numerous studies (5, 8, 13, 14) have appraised the attitudes of white students toward academic integration, but comparatively few have dealt with the attitude of Negroes. Available research ostensibly implies that the Negro is totally committed to integration in the schools (2, 3, 4). However, the Negro's cognitive support of integration may not be duplicated in affective components of his attitude. For example, Rubin (12) found that most Boston Negroes favored open housing, but that few were willing to make the initial move into white neighborhoods opposed to integrated housing. Similarly, interaction with white students for the first time may be construed as a threatening experience by the Negro.

For years Negroes in the South have been forced to judge themselves in the context of the second-class citizenship assigned them by whites. In addition, white racists have persistently insisted that Negroes are innately inferior to whites. Consciously or unconsciously, many Negroes are driven to question their basic adequacy as persons. When the Negro is initially thrust into an interactive and competitive situation with whites, his feelings of inferiority may erupt with great intensity. Research has demonstrated that even when Negroes receive objective confirmation of mental ability comparable to that of whites, in interracial experiences they are still inclined to feel inadequate and respond subserviently (6). This affective dimension is also evident in Pugh's finding (11) that Negroes in segregated institutions are better adjusted to the social life of their schools than Negroes in integrated settings. Likewise, Negro teachers in recently desegregated public schools manifested more resistance toward biracial interaction and more often requested to be excused from interracial participation than did white teachers (9).

The present study is concerned with the cognitive and affective reservations of Negro students toward academic integration. It also attempts to evaluate

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the relationship of sex to intensity of antiintegration sentiment. Although the Negro female typically has enjoyed a more stable position than the Negro male in a segregated society, the opposite may be true in the integrated setting (1).

B. METHOD

1. Subjects

The 212 Ss, 72 males and 140 females, were randomly selected from a segregated Negro high school in the deep South. Most of the Ss were scheduled to attend integrated schools the following year and were aware of the ensuing integration.

2. Procedure

An expanded form of Komorita's School Segregation Scale (7)¹ was administered to all Ss. This scale, originally developed for use with Caucasians, primarily deals with philosophical or cognitive endorsement of racial integration. However, items relating specifically to the Ss' association with local whites and their expectations relative to academic and social experiences the following year in integrated settings were included. The latter items focus on feelings, such as positive anticipation, confidence, insecurity, apprehension, and ambivalence, which the Negro may attach to these real experiences and thus provide some index of affective acceptance of integration.

The 55-item expanded Komorita scale is a Likert-type instrument which requires the S to mark his response to each item along a six-point scale from "I agree very much" to "I disagree very much." Participants were not required to sign their names and were assured that their responses would not be revealed to teachers or administrators.

C. RESULTS

The dependent variable in the investigation was affinity for academic integration. The independent variables were attitudinal component (cognitive *vs.* affective) and the sex of the Ss. To assess cognitive acceptance of integrated experiences, the *E* identified 22 items related to the general issue of academic integration; a concomitant set of 22 items concerned with feelings toward local integration provided a measure of affective affinity for academic integration.

¹ The Expanded Form of Komorita's School Segregation Scale has been deposited as Document number 10064 with the ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington, D. C. 20540. A copy may be secured by citing the Document number and by remitting \$1.25 for photoprints, or \$1.25 for 35-mm. microfilm. Advance payment is required. Make checks or money orders payable to: Chief, Photoduplication Service, Library of Congress.

The Ss were given 1-6 points credit for each item, with the smaller scores indicative of greater endorsement of integration. A total cognitive score based on the responses to the 22 cognitive items and a total affective score based on the 22 affective items were computed for each S. Examples of cognitive and affective items are included in Table 1.

TABLE 1
SAMPLE COGNITIVE AND AFFECTIVE ITEMS FROM EXPANDED KOMORITA SCALE

Items	Mean score
Cognitive	
1. The Negro should be accorded equal rights through integration.	1.539
2. Since segregation has been declared illegal, we should integrate schools.	2.427
3. Integration of the schools will be beneficial to both white and Negro children.	2.106
Affective	
1. I would prefer to attend Carver (the Ss' school) rather than a white school, such as City High or Central.	4.804
2. I look forward to having white classmates.	3.376
3. I could learn just as much by remaining in an all-Negro school.	5.122

A 2×2 mixed design analysis, with attitudinal component (cognitive *vs.* affective) as the within factor and sex as the between, yielded an F ratio of 200.189 ($df = 1/210$, $p < .005$) for the cognitive-affective dimension. No significant interaction or sex difference was obtained. A comparison of the attitudinal means demonstrated that the Ss' cognitive endorsement was greater than their affective endorsement of integration. A mean cognitive score of 68.62 indicates that the mean individual item score was 3.119, or "slightly agree" with prointegration items and "slightly disagree" with antiintegration statements. In contrast, a mean of 88.25 for the affective segment denotes an individual item mean of 4.0113 or "slightly disagree" with prointegration items and "slightly agree" with antiintegration declarations.

D. DISCUSSION

The results of the present study demonstrate that Negro students in the deep South may experience considerable personal conflict in the transition from segregated to integrated settings. Most students indicated philosophical commitment to the integration movement, but expressed affective disquietude concerning local integration. This reaction might be explicated in the context of Miller's (10) approach-avoidance paradigm. As long as actual integration is some time and distance away, the Negro may express commitment without major apprehension; but once integration is imminent, the prospect of face to

face confrontation with whites may prove more threatening than positive commitment to integration will counteract.

The findings of this study indicate that the Negro's affective reservations center around such concerns as white peer acceptance, fairness of Caucasian teachers, and his achievement in the integrated milieu. Students on the whole expressed some degree of agreement with such items as "I believe that Carver (present Negro school) is one of the best schools in the county," "I would prefer to attend Carver rather than a white school, such as City High or Central," "I could learn just as much by remaining in an all-Negro school," "I would feel more comfortable in a Negro than an integrated school," "I fear that white students would make fun of me," and "I would enjoy social activities more in a Negro than an integrated school." In contrast, they generally disagreed with such statements as "I look forward to having white classmates," "I feel that my grades will improve in an integrated school," "I would prefer white rather than Negro teachers," and "I believe that I would get a better education in an integrated than all-Negro school." These responses signify a willingness to maintain the *status quo* and to avert emotionally or to delay actual academic integration.

E. SUMMARY

An expanded form of Komorita's School Segregation Scale was administered to 212 Negro adolescents in a segregated southern high school. The scale included items pertaining to the general philosophical issue of integration and statements related to emotional affinity for local academic integration scheduled to begin the following year. The students expressed significantly greater ($p < .005$) philosophical endorsement of integration than emotional proclivity for actual integration in the local setting. An analysis of specific responses indicated that most of the Negro's affective insecurities centered around white peer acceptance, fairness of Caucasian teachers, and his achievement in integrated settings.

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SUPERIOR PERFORMANCE IQ OF MURDERERS AS A FUNCTION OF OVERT ACT OR DIAGNOSIS*

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A. INTRODUCTION

Ever since Wechsler (8) stated that "the most outstanding single feature of the adolescent psychopath's test pattern (Wechsler-Bellevue) is the systematic high performance score as compared with his verbal test score," much conflicting research has been reported on this point. Schafer (7) indicated a similar pattern with a group of adolescent psychopaths; and Weins, Matarazzo, and Gavor (9) have also supported the finding with a group of sex offenders. However, Foster (2), Fields (1), and Pantton (5), using delinquent or criminal groups, have not found confirming data.

The factor of poor diagnostic criterion for psychopaths has been pointed to by Guertin, Rabin, Frank, and Ladd (3) as contributing to the inconsistent results. The Weins *et al.* study (9) proposed using particular delinquent acts as a more reliable criterion than the diagnosis of psychopathic personality. However, the criterion of overt antisocial behavior is basically a different one from that of diagnosis. The latter presupposes a more enduring personality style of expression than is necessarily implied by the antisocial act criterion.

The rationale for expecting superiority of performance over verbal IQ for certain diagnostic groups has not often been made explicit. It is the author's view that verbal functioning requires some delay of impulse expression and, hence, action, in order for impulses to be symbolized in the form of thought and words. Performance functioning on the other hand is closer to direct impulse expression. Consequently, individuals, such as sociopaths, who are characterized by impulsive acts would be expected to have little capacity to delay impulse and, hence, function better on performance than verbal tasks. By this rationale, individuals who commit overt antisocial acts might also be predicted to have superior performance IQs. However, the diagnostic criterion implies a characteristic style of overt impulsive acts; while the criterion of overt impulsive acts, by itself, may or may not represent characteristic impulsivity.

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Recent studies by Prentice and Kelly (6) and Henning and Levy (4) have demonstrated that reading disability is associated with superior performance *IQ* among delinquent groups. While both studies imply reading disability as the causal factor, reading requires delay of impulse in order to symbolize. Consequently, at least some reading disabilities can be considered as much a result of failure to delay impulse as the superiority of performance functioning.

On the basis of the above rationale, it was predicted that the diagnostic criterion of character disorder would be a better predictor of superior performance *IQ* than the criterion of commission of antisocial acts.

The problem has been investigated in this study by use of individuals who had all committed the same type of overt antisocial act and who, in addition, were well diagnosed on the basis of lengthy and thorough procedures. Thus it was possible to test whether superior performance *IQ* was associated with overt antisocial behavior, regardless of diagnosis, or whether diagnosis is associated with superior performance functioning when the type of overt antisocial behavior is held constant for all.

B. METHOD

Forty-two persons, who were consecutively admitted to a university psychiatric hospital after pleading insanity to the charge of murder (first or second degree), were administered the full scale Wechsler Adult Intelligence Scale as part of their evaluation. Psychiatric diagnosis was made independent of testing and was based on extensive observation and interviewing by psychiatrists over a 30-day period. Seven cases which were not given a psychiatric diagnosis were not used in the study.

The remaining cases were grouped according to the following diagnostic categories: Group I sociopaths ($N = 14$), Group II other character disorders ($N = 8$), Group III noncharacter disorder psychiatric diagnosis ($N = 13$). The sociopaths and other character disorders were combined as one group of character disorders (Group IV) for some analyses, and the total group of murderers (Group V) was also considered.

The statistical analysis first compared the frequency distribution of superior performance or superior verbal *IQ* for the total group, and then for the several diagnostic groups against a 50-50 chance distribution for each group. Chi square corrected for continuity, or the Fisher-Yates exact probability formula (where any cell was 5 or less) was used. The second analysis compared the distribution of performance greater than verbal *IQ* of each group with every other group, and in every case the Fisher-Yates exact probability method was used.

C. RESULTS

The comparison of each diagnostic group of murderers with a chance distribution of $P > V$ indicated that, for murderers as a whole, just about as many had higher performance as had higher verbal IQ s; and this distribution was no different from chance expectation. There was some tendency (not statistically significant) for the sociopaths ($p = .40$) and for the other character disorders ($p = .30$) to have higher performance than verbal IQ s when considered against a chance distribution. When these two groups were combined as one group of character disorders, this trend was much stronger but still did not reach statistical significance ($p = .15$). Those murderers diagnosed in non-character disorder categories also showed a strong but reversed trend: i.e., $V > P$ ($p = .06$).

The exact probabilities of differences between the diagnostic groups when they were compared with each other indicated that the two character disorder groups, individually and in combination, differed at highly significant levels from the noncharacter disorder group (Group I-III, $p = .01$; Group II-III, $p = .01$; Group IV-III, $p = .003$). There was, however, no difference between the sociopathic group and the other character disorder group ($p = .98$).

D. DISCUSSION

The results indicate a clear rejection of the hypothesis that individuals who commit an overt antisocial act, in this case murder, will have cognitive styles more oriented toward performance than verbal functioning. The frequency of superior performance IQ was just about equal to the frequency of superior verbal IQ for the group of murderers as a whole.

While there was some tendency for individuals who were diagnosed as sociopaths or character disorders and who also committed antisocial acts to have higher performance and verbal IQ , this tendency was not sufficient to reach statistical significance. Perhaps in a larger sample significance would be obtained. But these results suggest that such a superiority of performance functioning is, at best, not a very definitive attribute of character disorders. It would appear that the usefulness for individual diagnosis is quite limited. However, the psychiatrically diagnosed murderers who were not character disorders showed a very marked opposite effect, that of more frequently having higher verbal than performance IQ s.

The markedly significant difference between those murderers diagnosed as character disorders and those murderers who were diagnosed as having other than character disorders seems to be largely a function of the Group III mur-

derers being consistently superior on verbal *IQ*. Here is a rather surprising finding and one that is difficult to interpret. It suggests that psychiatrically diagnosed murderers who are not character disorders tend to be, in part, characterized by superior verbal intellectual functioning. It may be that one of the reasons why sociopaths are clinically regarded as having high performance *IQ*s is partly a function of the sharp contrast effect with antisocial individuals who are not sociopathic.

In terms of neither the antisocial act nor the character disorder diagnosis criteria was the hypothesis of superior performance *IQ* confirmed at levels of statistical significance. However, by the character diagnosis criteria, a trend in the predicted direction was found; while, by the overt act criterion, the hypothesis was clearly rejected.

Since the hypothesized $P > V$ *IQ* was not found to be statistically significant by either criterion, the results cast doubt on the validity of the hypothesis. But in view of the trend suggesting that character disorders are more frequently higher on *P* than *V IQ*, the diagnostic criterion appears to be a more promising one than that of overt antisocial acts.

Considering those studies which have found confirmation of $P > V$ with delinquent groups, it may be that incarcerated delinquents would diagnostically be mostly composed of character disorders, while murderers who plead insanity are diagnostically a more diverse group.

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A NOTE ON ETHICAL RISK HYPOTHESIS*

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A. INTRODUCTION

Rettig and Rawson (5) have developed the "ethical risk" hypothesis (*ERH*) which postulates that ethical behavior varies predominantly with the perceived risk incurred by such conduct. Although perceived risk has been delineated as a function of five externally mediated sources of gain and loss, the most critical among the sources has been identified to be the negative reinforcement value of censure (*RVcs*): that is, the perceived magnitude of social punishment that one anticipates for an unethical act. The *RVcs* alone was found to explain more variance of judgment than the remaining four sources taken together (4).

There is research evidence, however, which, instead of supporting the simplified picture presented by the *ERH*, suggests the possibility of a complex set of considerations in ethical risk taking. Aronfreed, for example, demonstrates the presence, at least within some individuals, of an internalized control system which restrains immoral behavior even in "the absence of any explicit or threatened external punishment" (1, p. 438); Galbraith (3) finds internally mediated guilt as an important deterrent for verbal responses to sexual stimulus materials; and Baumhart's (2) samples of business executives hold internal restraints responsible for ethical and external causes for unethical behaviors. These findings cast doubt on the importance of *RVcs* as the most critical deterrent of unethical risk taking. Rather, it is likely that the findings of Rettig and his co-workers may be specific to the type of unethical act investigated or the measuring instrument—The Behavior Prediction Scale (BPS)—used, or both.

The present study was designed to throw some light on the issue by determining whether different results would emerge when (a) the format of the scale is changed, (b) other ethically dubious behaviors are also included in the design, and (c) the determinants of unethical risk taking are considered separately in connection with engaging or not engaging in unethical acts.

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¹ This research was conducted at The Ohio State University. The author is grateful to Mr. Ronald Greene for helpful suggestions and comments.

B. METHOD

The item format of the BPS was changed into a new scale, called the Behavior Determinant Scale (BDS), which retained the theme of stealing money from a bank and the five determinants of ethical risk taking: namely, expectancy of gain (*Egn*), reinforcement value of gain (*RVgn*), expectancy of censure (*Ecs*), reinforcement value of censure (*RVcs*), and reference group (*Refgr*).

In addition, the BDS also incorporated some new changes. For example, two more determinants were added: the internally mediated expectancy of guilt (*Egl*) and the reinforcement value of guilt (*RVgl*). These seven determinants were considered for three arbitrarily determined conflict situations (stealing money from a bank, extra-marital sex, and cheating on a final examination) which were repeated for two types of decisions (to engage or not to engage in unethical acts); thus there were six items with seven determinants in each. Ss were asked to judge the importance of the determinants on a six-point scale ranging from "Not at all important," zero, to "Very important," 6, with "Somewhat important," 3, in the middle. The following is an example of an item from the BDS:

Situation: A bank employee was in need of a large sum of money. He was in conflict about stealing money from his bank.

Decision: He decided to steal the money from the bank. How important were the following considerations in his decision making:

Considerations:

1. The money was needed to pay for a crucial medical operation.²
2. He was almost sure that his theft would not be found out.³
3. He was almost positive that he would not feel guilty.⁴
4. He felt that his theft would not have severe consequences for the bank.⁵
5. He knew any slight guilt he might feel would quickly pass.⁶
6. The doctor has assured the employee that the operation would cure his illness.⁷
7. If somehow his theft would become known, he was sure he could settle the matter privately with the bank president.⁸

Since the BDS, unlike the BPS, requires that Ss make direct importance ratings of the determinants, it might be possible that one's own need for being so-

² *RVgn* (high).

³ *Ecs* (low).

⁴ *Egl* (low).

⁵ *Refgr* (low).

⁶ *RVgl* (low).

⁷ *Egn* (high).

⁸ *RVcs* (low).

cially desirable may affect his ratings. To take this into account, the study was conducted under two experimental conditions: Anonymous (*A*) and Nonanonymous (*NA*). In the *NA* condition, *Ss* were asked to write their names and telephone numbers so that they might be called later in connection with this experiment. In the *A* condition, they were not asked for any personal information. Two groups of 50 subjects each, drawn from the psychology classes of the Ohio State University, were randomly assigned to the two treatment conditions.

The *Ss* filled out the BDS, and subsequent to it, judged the undesirability of the three unethical acts (stealing money, extra-marital sex, and cheating on a final examination) on a scale again ranging from "Not at all undesirable," zero, to "Very undesirable," 6.

C. RESULTS

Table 1 presents the analysis of variance of the determinants under various situations and decisions. It is obvious that not only were the main effects of the determinants highly significant but the interactions between (*a*) the determinants and decisions and (*b*) the determinants and situations were also highly significant. Although less pronounced, the main effects of decisions and the second order interactions among decisions, determinants, and situations were also

TABLE 1
ANALYSIS OF VARIANCE OF DETERMINANTS FOR VARIOUS DECISIONS,
SITUATIONS, AND EXPERIMENTAL CONDITIONS

Source	<i>df</i>	MS	<i>F</i>
Between <i>Ss</i>	49		
Group (<i>A</i>)	1	46.65	2.59
Error (<i>b</i>)	48	17.95	—
Within <i>Ss</i>	2050		
Decision (<i>B</i>)	1	23.68	8.64**
Situation (<i>C</i>)	2	3.97	1.28
Determinants (<i>D</i>)	6	157.97	37.52***
<i>B</i> × <i>C</i>	2	4.34	2.66
<i>B</i> × <i>D</i>	6	141.27	66.22***
<i>C</i> × <i>D</i>	12	20.42	10.74***
<i>B</i> × <i>C</i> × <i>D</i>	12	8.41	6.00**
Additional interactions	41	1.52	—
<i>B</i> × <i>Ss</i>	48	2.74	—
<i>C</i> × <i>Ss</i>	96	3.10	—
<i>D</i> × <i>Ss</i>	288	4.21	—
<i>B</i> × <i>C</i> × <i>Ss</i>	96	1.63	—
<i>B</i> × <i>D</i> × <i>Ss</i>	288	2.13	—
<i>C</i> × <i>D</i> × <i>Ss</i>	576	1.90	—
<i>B</i> × <i>C</i> × <i>D</i> × <i>Ss</i>	576	1.40	—

** $p < .01$.

*** $p < .001$.

significant. Neither the group effect (anonymity) nor its interactions with any of the sources were significant.

The Newman-Keul procedure (7, p. 85) was used to compare the significance of differences between mean scores. The findings indicated that *Ecs* ($\bar{x} = 4.95$) was significantly the most important ($p < .01$) determinant of unethical risk taking. *RVcs* ($\bar{x} = 4.36$) was not significantly different from *Egn* ($\bar{x} = 3.91$) or *RVgn* ($\bar{x} = 3.39$). Although the differences were not significant, the mean expectancy scores of gain and censure were invariably larger than the corresponding reinforcement values. Further inspections of the findings indicate that the mean scores for *Egn* and *RVgn* were significantly greater ($p < .01$) for the positive decisions ($\bar{x} = 4.84, 5.10$ respectively) than for the negative decisions ($\bar{x} = 2.96, 2.72$ respectively), whereas the mean scores for *RVcs*, *Egl*, and *RVgl* showed significant opposite trends ($p < .01$). The most important, *Ecs*, and the least important, *Ref gr*, did not significantly differ for the positive and negative decisions. Analysis of mean differences among the three situations showed that *Ref gr* was significantly more important ($p < .01$) for making decisions about extra-marital sex ($\bar{x} = 3.72$) than for cheating ($\bar{x} = 1.98$) or stealing ($\bar{x} = 2.37$); and the gain considerations (*Egn* and *RVgn*) were most important for cheating and extra-marital sex ($p < .05$). The censure and guilt considerations, although rated as expected, were not significant for the three situations.

The analysis of judged undesirability of three kinds of unethical behavior showed that only the main effects of unethical acts were significant ($F = 5.85$; $df = 2, 96$; $p < .01$). The mean comparisons show that stealing ($\bar{x} = 4.84$) was considered significantly more undesirable ($p < .01$) than cheating ($\bar{x} = 4.24$) or extra-marital sex. Furthermore, anonymity did not affect the judged undesirability of the ethical acts.

D. DISCUSSION AND CONCLUSIONS

The findings do not substantiate the *ERH* that *RVcs* is the most critical deterrent of unethical risk taking. Rather, such a decision seems to involve varying sets of considerations for various types of unethical situations and decisions. *Ecs*, although not significantly different from *RVcs*, is found to have the highest mean importance score among all the determinants. A similar finding has been reported by Sinha and Wherry (6), who found *Ecs* to be a better predictor of norm violating behavior than *RVcs* in a simulated industrial setting. However, the fact remains that expectancy and reinforcement values are not significantly different for any of the determinants. The consistently higher

score of the former for all the determinants seems to suggest two things: (a) the differentiation between expectancy and reinforcement value, although conceptually possible, is not a very meaningful one in the judgment of the subjects and (b) if this differentiation is maintained, the reinforcement value of any source, to a great extent, is contingent upon its expectancy.

These findings also indicate that guilt and censure are judged to be effective in *detering* unethical risk taking and gain in *facilitating* such acts. This supports Baumhart's finding (2) that different sets of considerations are involved in unethical and ethical acts. The data, however, do not support Galbraith's finding (3) that guilt is an important determinant of violations of sex norms. Rather, it was *Ref gr* that was judged to be crucial for extra-marital activities, possibly because this determinant is more personalized for extra-marital sex than for cheating or stealing, which do not seem to affect any particular person. The gain factors, on the other hand, are judged to be more important for cheating and stealing.

The conclusion would seem to be as follows: there are strong indications that the kind of unethical decision making which has been studied empirically is a complex phenomenon, and any one explanatory tool may be inadequate to establish broad, valid generalization.

E. SUMMARY

The study was designed to test the validity of the ethical risk hypothesis that the negative reinforcement value of censure (*RVcs*) is the most important deterrent of unethical risk taking. Two groups of 50 Ss filled out a scale, called the Behavior Determinant Scale, in which they were asked to rate the importance of seven determinants—expectancy of gain (*Egn*), reinforcement value of gain (*RVgn*), expectancy of censure (*Ecs*), reinforcement value of censure (*RVcs*), reference group (*Ref gr*), expectancy of guilt (*Egl*), and reinforcement value of guilt (*RVgl*)—with reference to (a) three types of unethical issues (stealing money from bank, extra-marital sex, and cheating on examination), as well as (b) whether or not an hypothetical person finally decides to behave in the contemplated manner. The findings indicated that (a) *Ecs*, rather than *RVcs*, was the most critical determinant of unethical behavior, (b) *Egl* and *RVgl* were more effective in deterring unethical acts and gain factors in facilitating such acts, and (c) *Ref gr* was more crucial for violations of sex norms, and *Egn* and *RVgn* for cheating and stealing. In conclusion, it seems that unethical risk taking may involve a complex set of considerations for various types of unethical situations and decisions.

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ANGER IN RELATION TO AGGRESSION IN PSYCHOTHERAPY GROUPS*

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A. INTRODUCTION

The concept of catharsis denotes the tendency of aggressive acts to diminish as a consequence of one or more elements operative in prior aggression. In recent years a number of empirical studies have tried to understand aggression in relation to cathartic factors such as anger, frustration, or permission to aggress. Generally, these studies have compared measures of aggressiveness before and after the introduction of a cathartic variable. The complexity and contradictory nature of the findings of these studies prevent the drawing of firm conclusions (2, 3). For example, studies by Kenny (7), Feshbach (6), and Buss and Foliat (4) showed no diminution of aggression after the instigation of catharsis by various means; whereas studies by Feshbach (5), Worchel (10), and Berkowitz (1) produced findings conforming to the catharsis model to some degree. After sifting the evidence from numerous studies, Buss concluded that "the most important determiner of the cathartic effect is the presence or absence of anger" (3, p. 89).

The purpose of the present study was to test the hypothesis that the frequency of aggressive responses following an expression of anger would be less than the frequency of aggressive responses preceding the incidence of anger. This study differed from others because it focused on anger as a cathartic agent, and it observed occurrences of aggression in the interaction of patients in psychotherapy groups. The latter aspect of the study is of special importance, inasmuch as many prior studies utilized contrived conflict situations or fantasied aggression.

B. METHOD

1. Subjects

The subjects were 12 patients divided equally into two psychotherapy groups containing three males and three females. The mean age of the patients was 31 years, and a majority held white collar jobs. The groups met in a private office

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once a week for 90 minutes. All patients were able to function adequately in an important life area—on a job or at home in the case of housewives. The groups differed with respect to diagnoses: one group contained three persons manifesting borderline states, one psychosomatic state, and two hysterical personalities; while the other group contained no psychotics, three cases of anxiety neurosis, one hysterical personality, one neurotic compulsive reaction, and one neurotic depressive reaction. Additionally, the groups differed in terms of the amount of individual psychotherapy undertaken prior to and during the group experience.

2. Procedure

Magnetic tape recordings were made of the initial 20 group-psychotherapy sessions. The writer served as therapist in each group; and employed an orientation that encouraged the expression of feelings toward persons inside and outside the group. The responses obtained on tapes were later reduced to "statements," propositions containing a subject and predicate, or a series of propositions spoken uninterruptedly by one person that express a single thought (8). These statements were then classified as to the presence or absence of aggression and anger. "Aggression" was defined as a response that delivers noxious stimuli to another organism, consisting of statements about another person that are derogatory, critical, or otherwise injurious in regard to that person's appearance, behavior, or personality. "Anger" was defined as a tension state accompanying aggression, denoted by a verbal report of a subject ("I am mad" or an equivalent statement) or by changes in the mode of verbal expression indicative of tenseness, incoherence, or excitability in speech. Operationally, responses were classified by the writer during a content analysis of the tapes. A reliability check by an independent observer, who classified 10 per cent of all taped responses, resulted in agreement with the writer's judgment to the extent of 97 per cent and 80 per cent, respectively, in the case of "aggressive" and "angry" responses.

Frequencies of aggressive responses in 30-minute intervals preceding and following expressions of anger were arranged in order to make comparisons. That is, instances of anger were detected for each patient, and then the frequency of aggressive responses made by that patient were tabulated for the 30-minute interval preceding and following the *initial* expression of anger. It was assumed that the 30-minute interval would permit sufficient time for the build-up and release of aggression, and would result in enough aggressive responses to permit the application of statistical tests. A binomial test was

applied to these data in order to determine whether a significant diminution in aggression occurred after the initial expression of anger.

C. RESULTS

In Table 1 the frequency of aggressive responses in 30-minute intervals before and after initial expressions of anger are shown with accompanying

TABLE 1
FREQUENCY OF AGGRESSIVE RESPONSES IN 30 MINUTE INTERVALS
BEFORE AND AFTER INITIAL EXPRESSIONS OF ANGER

Patient	Group ^a	Aggressive responses		Binomial Test probability
		Before anger	After anger	
James	I	3	1	> .05 ^b
Dot	I	11	2	.01
		11	5	.11
Carol	I	5	0	.03
Cleo	I	1	5	.11
Hugh	II	4	0	> .05
		7	2	.09
		5	1	.11
Peter	II	6	1	.06
Charles	II	1	3	> .05
Vi	II	5	1	.02
		8	2	.06
		5	2	.06
Janice	II	6	4	.38
		8	4	.19
		8	2	.06
Mary	II	11	3	.03
		5	1	.11

^a Two patients in Group I did not express anger.

^b Probabilities are taken directly from a table in Siegal (9, p. 250). No probabilities are listed for $N < 5$.

probability levels for binomial tests. Eighteen instances of anger were observed, and in 16 cases the frequency of aggressive responses diminished after the expression of anger. Four of these individual comparisons resulted in a probability level less than .05. In view of the very small frequencies compared in most of these tests, it seemed that a reasonable evaluation of the hypothesis in question might be undertaken by asking the likelihood of obtaining a given percentage of cases in which aggressive responses diminished in the predicted direction. A binomial test applied to the finding that 16 comparisons occurred

in the predicted direction and that two did not occur in the predicted direction resulted in a probability of .001. On this basis, it may be concluded that generally patients tended to diminish their aggressive responses after expressions of anger.

Comparisons were also made with the use of frequencies for time intervals of 15 minutes. These were cases in which the initial expression of anger occurred at a point in the psychotherapy session too early or too late to permit use of the 30-minute interval. In the two groups there were nine such instances, but in six cases the frequencies were not in the direction predicted, and in no instance was the relationship statistically significant. Negative findings were found also in all comparisons involving smaller units of time, which led to the conclusion that the 30-minute interval was a meaningful unit in relation to the arousal and working through of anger.

In conclusion, the present study suggests that anger has a cathartic effect relative to aggressive behavior in group psychotherapy. This conclusion is limited, of course, by the small number of subjects and instances of behavior observed. However, the findings lend support to an hypothesis central to previous theoretical formulations and point to the need for more studies conducted in a realistic setting.

D. SUMMARY

The aggressive verbal behavior of 12 patients in two psychotherapy groups was studied in order to test the hypothesis that the frequency of aggressive responses occurring after expressions of anger would be less than the frequency of aggressive responses occurring before anger. Eighteen such cases were compared, and in 16 it was found that aggressive responses diminished in the predicted direction. It was concluded that anger had a cathartic effect relative to aggressive behavior in group psychotherapy.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator.

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THE CONSTRUCT OF DEPENDENCE PRONENESS*¹

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A. INTRODUCTION

The purpose of the present study is to examine whether students in an Indian University associate with dependence-prone and independent-type personalities those traits that research in the West has established to be, in fact, associated with such personalities. Such a cross-cultural comparison would not only help stabilize the construct of dependence-proneness; but also would be likely to have bearings upon the understanding of some of the growth problems of an underdeveloped country.

B. METHOD

On the basis of day-to-day observations, as well as a survey of relevant literature, 18 characteristics² were selected to be examined with reference to dependence-prone and independent-type persons. The list of characteristics was presented to a sample of 53 male and 48 female seniors of Patna University, India. They were asked to recall the names of two persons they knew quite intimately—one a very dependent and the other a very independent type of person. The persons being recalled could be male or female, thus making

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² The English version of the characteristics would read as follows: Social in nature, follows others' directions, confides uncritically, easily gets anxious, tries for his success, superstitious, obeys elders, seeks appreciation, of religious nature, escapist, gets easily discouraged, seeks help, takes interest in a work, fatalist, tries new ways to success, practical, traditional, and falls into the traps of others.

four combinations possible: namely, Male dependent-Male independent, Male dependent-Female independent, Female dependent-Male independent, and Female dependent-Female independent.

C. RESULTS

Although *Ss* more frequently preferred persons of their own sex for rating ($p < .001$ for male and $p < .02$ for female sample), neither the sex of the ratees nor the sex of the raters showed significant associations with the characteristics (chi squares were not significant); except on four characteristics: namely, Obeying elders, Being religious, Traditional, and Confiding uncritically, which the female raters assigned more discriminately to a dependence-prone than to an independent-type ratee.

Therefore, frequency tallies of male and female subjects, as well as of male and female ratees, were pooled together. The chi squares testing the significance of differences in the characteristics between dependence-prone and independent-type persons across the whole sample revealed that a dependence-prone person is perceived to be a person who is Anxious ($\chi^2 = 6.59$, $df = 1$,³ $p < .05$), Superstitious ($\chi^2 = 9.07$, $p < .01$), Escapist ($\chi^2 = 9.07$, $p < .01$), Fatalist ($\chi^2 = 12.07$, $p < .01$), Unpractical ($\chi^2 = 22.36$, $p < .01$), Traditional ($\chi^2 = 6.11$, $p < .05$). The dependence-prone person is also known to be a person who Confides uncritically ($\chi^2 = 17.70$, $p < .01$), Likes to follow others ($\chi^2 = 42.58$, $p < .01$), Obeys elders ($\chi^2 = 4.56$, $p < .05$), Gets easily discouraged ($\chi^2 = 56.25$, $p < .01$). And, he is *not* a person who Will exert for his advancement ($\chi^2 = 9.07$, $p < .01$), Will take much interest in any work ($\chi^2 = 38.38$, $p < .01$), Will look for new ways to success ($\chi^2 = 27.92$, $p < .01$), and Will not fall into the traps of others ($\chi^2 = 12.07$, $p < .01$).

Chi squares on the remaining two characteristics, Need for social appreciation and Religious orientation, although not significant, were more frequently attributed to a dependence-prone subject than to an independent-type subject. The third one, Social in nature, was assigned more frequently to an independent type of person than to a dependence-prone person.

D. SUMMARY AND CONCLUSIONS

The findings reveal that a dependence-prone person is anxious, superstitious, escapist, fatalist, unpractical, and traditional. He confides uncritically, likes to follow others, obeys elders, gets easily discouraged, and seeks others'

³ The df for the remaining chi squares is 1.

help. He is *not* a person who will exert for his advancement, will take interest in his work, will look for new ways to success, or will not fall into the traps of others. This is quite a neat picture of what the construct of dependence-proneness stands for. The question is whether it is a true picture or just a stereotype developed out of social communications in a closely interacting culture. Even stereotypes contain grains of truth as Campbell⁴ argues: "the more opportunities for observation and the longer the exposure, the larger the role of real differences in the stereotypes [p. 821]." In the present study, subjects rated persons who were supposed to be quite intimately known to them. The opportunities of observation and exposure, thus, can be presumed to have been maximized. The findings, therefore, may be taken to suggest strongly that the cognitive picture of the construct of dependence-proneness holds true for the sample of Indian students.

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⁴ Campbell, D. T. Stereotypes and the perception of group differences. *Amer. Psychologist*, 1967, **22**, 817-829.

PERFORMANCE OF CANADIAN STUDENTS ON THE REMOTE ASSOCIATES TEST*

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The Remote Associates Test (RAT) was designed by Mednick¹ as an associative test of creativity. It contains 30 items and is scored from zero to 30. An item consists of three words for which a subject is required to produce an associate that is common to all three. Normative data for Form 1 of the RAT reported by Mednick and Mednick² indicate a range of mean performance for U.S.A. university undergraduates on the test from 13.14 (University of Maryland; $N = 73$, $SD = 4.80$) to 18.00 (Bennington College; $N = 288$, $SD = 4.90$).

In the present study, RAT data were collected from first year Canadian students who were enrolled in an introductory psychology course at the University of Alberta. Since performance on the RAT is dependent upon familiarity with certain linguistic conventions that are common to the U.S.A. culture, one might hypothesize that Canadian students would perform at a relatively lower level than would U.S.A. students. This, however, does not seem to be the case. The mean RAT score for the Alberta students was 16.19 ($N = 83$, $SD = 4.91$). By sex, the means were 16.81 ($N = 36$) for females; and 15.72 ($N = 47$) for males.

Statistical treatment of the data, with two-tailed t tests, indicated that the mean RAT performance of the Alberta students was significantly greater than that of the Maryland students ($p < .001$), but significantly below that of the Bennington College students ($p < .01$). Comparisons with other data provided in the Mednicks' manual (p. 3) indicated no significant differences between Alberta students and University of California at Los Angeles freshmen ($p > .05$) or University of Michigan undergraduates ($p > .05$). No significant differences were found between the Alberta males and females ($p > .05$).

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¹ Mednick, S. A. The associative basis of the creative process. *Psychol. Rev.*, 1962, 69, 220-232.

² Mednick, S. A., & Mednick, M. T. *Examiner's Manual: Remote Associates Test*. New York: Houghton Mifflin, 1967.

Several of the items were discussed with the Alberta students in an attempt to assess familiarity with the words used in the test. Although some claimed that they were not familiar with certain words, their replies or complaints seemed to differ little in content with those of a group of students the author had previously tested at the University of Nevada ($M = 15.2$, $N = 106$). The only exception to this was a group of 12 Alberta students who did not list English as a first language and who, therefore, were not included in the above sample. The mean RAT score for this group was 8.8 ($SD = 5.2$), which differs significantly from the total Alberta mean ($p < .001$). It appears that whether one has learned English as a first language is a more important factor for performance on the RAT than are regional differences when English is learned as a first or only language.

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ACTIVE-PASSIVE SOCIAL ATTITUDES TOWARD SELF AND IDEAL-SELF IN CHILDREN IN CANADA AND THE UNITED STATES*

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The active-passive dimension has been of considerable interest in cross-cultural comparisons, especially between North and South America and between Mexico and the United States. This study extends the cross-cultural comparison of the active-passive dimension by comparing active-passive social attitudes toward self and ideal-self in children in Canada and the United States. The instrument consisted of sixteen items from the Social Attitudes Inventory by Lucas and Horrocks¹ and as described and used by Hereford *et al.*² Each item has a form for males and females, which presents a statement concerning adolescents to be answered as to whether one thinks he is like or wants to be like the hypothetical boy or girl.

Fifty Canadian school children and fifty U.S. school children were the samples. Each sample had a modal age of 14 years and came from the general middle socioeconomic level and was composed of 25 boys and girls. The Canadian group was drawn from the Calgary Public School Board, Calgary, Alberta; and the U.S. group from the Aberdeen School District, Aberdeen, Washington. The Social Attitudes Inventory items were given separately to the samples during the regular school day.

The scores for the items were summed for the groups and used as the dependent measures in a complex analysis of within-subjects variability as outlined by Myers,³ where effects could be observed for country, the active-passive dimension, and for self-ideal-self. All main effects, U.S.-Canada, active-passive, and self-ideal-self showed significant *F*s.

The significant *F* for the main effect variable, U.S.-Canada, indicates that

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¹ Lucas, C. M., & Horrocks, J. E. An experimental approach to the analysis of adolescent needs. *Child Devel.*, 1960, 31, 479-487.

² Hereford, C. F., Selz, N., Stenning, W., & Natalicio, L. A cross-cultural comparison of the active-passive dimension of social attitudes. *Interamer. J. Psychol.*, 1967, 1, 33-39.

³ Myers, J. L. *Fundamentals of Experimental Design*. Boston: Allyn & Bacon, 1966.

the U.S. sample produced significantly higher scores than the Canadian sample. U.S. pupils responded with more patterns which included a "yes" for both the self and ideal-self ratings. Some possible interpretations are that the congruence between self and ideal-self is greater for U.S. pupils, or that Canadian pupils are more critical or conservative when comparing their self and ideal-self ratings.

For the active-passive dimension an examination of cells shows that, regardless of self-ideal-self perceptions and of country, there is a tendency for pupils to respond more often with a "yes" to active than to passive items. A possible explanation is that the social attitude inventory active items are more attractive than the passive items, but a more likely explanation concerns the samples. Children of this age and socioeconomic situation may have more active than passive orientations. It is also likely that these children are more activity oriented than the general population.

For the self-ideal-self variable, regardless of country, or the active-passive dimension, pupils made more "yes" responses to the ideal-self. They more often said their ideal-self was similar to the items presented than that their own self was similar. Thus few of the pupils responding felt that their self was very similar to their ideal-self, at least as far as they could make such a comparison on the Social Attitudes Inventory.

There was significant interaction between the two within subjects variables: active-passive and self-ideal-self perception. This results from the fact that the self was seen more often as passive and the ideal-self more often as active.

There was no significant interaction between the variables U.S.-Canada and active-passive, perhaps because there is no difference in "yes" or "no" responses between the two cultures when the active-passive dimension is considered. This finding does not support a widespread but rather undocumented feeling in Canada than Canadians may be more passive than citizens of the U.S. It must be noted, however, that the areas sampled, Washington State and Alberta, are similar in many ways; other parts of Canada or the U.S. might show very different results.

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ATTITUDES TOWARD FEMINISM IN DIFFERENT NATIONAL STUDENT GROUPS*

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The combination of sex roles characterizing the status of the American female has evoked interest and sometimes disapproval among people of other cultures. The present report summarizes findings from various national groups concerning attitudes toward feminism.

Unmarried male and female English, French, German, and American college students residing in European youth hostels, Moroccan male students, and American students of each sex enrolled at the University of Cincinnati were examined *via* the Kirkpatrick Belief-Pattern Scale for Measuring Attitudes Toward Feminism. The scale was administered in English or French, depending on the language facility of each S. The *n* of each group was 25.

The results yielded the following rank ordering of mean scores, low (anti-feministic) to high (profeministic): Moroccan male, American male (in U.S.A.), French male, German female, German male, French female, American female (in Europe), English male, English female, American male (in Europe), American female (in U.S.A.).

Several aspects of the results conform to what would be expected on an intuitive basis and from knowledge of the various cultures involved. For example, the Moroccan males produced feminism attitude scores significantly lower than any other group; females produced a higher mean score than males; and, in general, females had higher scores than males of the same nationality. It is the deviations from these "expected" trends, particularly with American Ss, that were of greatest interest. Both the American male and female samples, that were of greatest interest. Both the American male and female samples, showed scores significantly different from those produced by subjects of either sex from all European nationalities, but in opposite directions: i.e., American males were significantly less feministic and American females significantly more feministic (Moroccans were omitted from this analysis). In no other case was the difference between Ss of the same nationality significant ($p = .01$). American Ss abroad exhibited a striking contrast. Both sets of American Ss tested abroad produced scores significantly ($p = .01$) dif-

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ferent from their like-sexed countrymen at home. The difference between the two American-in-Europe groups was significant ($p = .05$), but in the "wrong" direction: i.e., males yielding *higher* feminism scores than the females. In no other case did males produce significantly higher feminism scores than females of the same nationality. Of the six possible comparisons involving American students, five of these yielded differences significant at the .01 level; the remaining difference (viz., male-female in Europe) exceeded the .05 level (in the "nonexpected" direction).

The scope of the study is insufficient to suggest etiology which might account for the results. These data merely offer an additional concrete example of the heterogeneity of sexual attitudes characteristic in the American culture, and provide a comparison with the apparently more stable European attitudes concerning the same issues.

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REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from the ADI.

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ATTITUDES TOWARD NEGROES AND STEREOTYPES ABOUT AMERICANS AMONG CHINESE STUDENTS IN TAIWAN AND THE UNITED STATES*

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A. INTRODUCTION

Though much has been written about cultural influence, few studies pertain to the influence of American culture on foreign visitors, particularly foreign students. In the present study it was hypothesized (a) that attitudes and stereotypes of Chinese in the U.S. would differ from those of Chinese in Taiwan, in the direction of American attitudes and stereotypes; and (b) that this tendency would increase with length of stay in the U.S.

B. METHOD

Fifty-four students participated forming three groups of 18 each. One group consisted of Taiwanese high school seniors, residing in Taiwan, who had applied for student visas to the U.S. A second group consisted of Taiwanese transfer students residing in the U.S., and a third group was made up of American college students. Of the Chinese groups, one had been directly exposed to American culture for an average duration of 3.26 years, and the other had received no direct exposure as yet. Though these groups were not randomly assigned or pretested, they may be regarded as comparable because they both had similar educational goals and both had applied for visas and obtained them.

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All three groups were presented questionnaire booklets consisting of a measure of attitudes toward Negroes, and a list of trait adjectives. The attitude measure consisted of Hinkley's² 16-item Form A. Stereotypes of Americans were elicited by a list of 35 trait adjectives borrowed from the set originally used by Katz and Braly.³ Both measures were translated into Chinese by one of the investigators, and verified as to accuracy by three additional bilingual Chinese.

Respondents were tested in group sessions lasting approximately 15 minutes each, in which they were presented both the attitude measure and the trait adjectives. All Ss were asked also to indicate on a 5-point scale the degree of contact or association they had had with Negroes.

C. RESULTS AND DISCUSSION

Hypothesis (a) was supported by a significant difference between mean attitudes of the two Chinese groups, with the Chinese in the U.S. being less favorable toward Negroes, more closely approximating the attitudes of the American group. The stereotype analysis, which compared the percentages of each group which chose each stereotype, supported the above finding. On 10 of the 16 stereotypes, the Chinese in the U.S. showed percentages more similar to those of Americans than was the case for the Chinese in Taiwan.

To test hypothesis (b), the Chinese in the U.S. were divided into three groups of varying length of stay. The two shorter duration groups showed comparably less favorable attitudes, whereas the longest duration group (4-8.1 years in U.S.) showed significantly more favorable attitudes, comparable to the attitude level of the Chinese in Taiwan.

By way of explanation of the above findings, it may be that initially the Chinese in the U.S. were exposed primarily to the white American majority group, thus accounting for attitudes similar to this group. However, it would seem that the Chinese students might want to seek out and socialize with other minority groups; and, as their stay increased, they might likely come into increased contact with Negroes. This increased interaction might tend to counteract the earlier negative influences, leading to increased interpersonal attraction. Such a notion has received major support from Deutsch and Collins.⁴ It

² Hinkley, E. D. The influence of individual opinion on construction of an attitude scale. *J. Soc. Psychol.*, 1931, 3, 282-296.

³ Katz, D., & Braly, K. W. Racial stereotypes of 100 college students. *J. Abn. & Soc. Psychol.*, 1933, 28, 280-290.

⁴ Deutsch, M., & Collins, M. E. *Interracial Housing*. Minneapolis: The Univ. Minnesota Press, 1951.

was also supported by the present study where it was found that those Chinese who reported greater contact with Negroes showed significantly more favorable attitudes toward Negroes than those who reported less contact.

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RELIABILITY OF ORDINAL SCALES DERIVED BY EGO-INVOLVED JUDGES*

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The psychophysical methods of paired comparisons and of rank ordering when applied to the same data have yielded the same results.² Hevner's study³ involved the evaluation of handwriting samples with both methods, as well as Thurstone's equal appearing interval technique; and the three approaches led to the same adjudged serial order of quality of the samples. When consideration is limited to the methods of paired comparisons and ranking, the question arises whether these conclusions hold for dimensions more ego-involving than the evaluation of the handwriting of other persons.

The hypothesis here tested is that the ordinal scales derived from the judgments of ego-involved persons by both psychophysical methods will be different. In more specific terms, persons identified with, and in preparation for, a given occupation will rank that occupation, and, accordingly, other occupations against which it is compared, differently by the two psychophysical methods. The rating (R) task consisted of rating the following occupations in terms of the value of each to mankind: architect, banker, clergyman, dentist, lawyer, physician, and teacher. The paired comparisons (PC) task consisted of rating the 21 pairs of those same seven occupations. The subjects were students in teacher training curricula, divided into two groups to control for possible effects of order of presentation of the psychophysical methods. One group, the R-PC Group, $N = 46$, consisted of those individuals asked to do direct rankings first and one week later to do paired comparisons of the same data. The second group, the PC-R Group, $N = 42$, was asked to perform the same activities but in reverse order: paired comparisons followed one week later by the direct rankings. The two groups are viewed as essentially homogeneous in composition.

The data for each group, R-PC and PC-R, were treated separately by

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² See p. 105, Underwood, B. *Experimental Psychology*. New York: Appleton-Century-Crofts, 1949.

³ Hevner, K. An empirical study of three psychophysical methods. *J. Gen. Psychol.*, 1930, 4, 191-212.

means of the correlation ratio; and then the total data from both groups were treated similarly. For the R-PC group, η_{R-PC} and η_{PC-R} each = .87. For the PC-R group, η_{R-PC} and η_{PC-R} each = .91. No difference was found attributable to the order of presentation of psychophysical method, and the data from the two groups were combined. For the combined group, η_{R-PC} and η_{PC-R} each = .89. Each of the six correlation ratios is significant at $p < .01$. Thus, the hypothesis of this study must be rejected; instead, it is concluded that ordinal scales derived by the two psychophysical methods were essentially the same. The methods of rank ordering and paired comparisons applied to the same data yielded a high level of reliability.

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(Manuscripts are printed in the order of final acceptance)

Contact as a variable in intergroup interaction	149
By RICHARD W. BRISLIN	
Language and social interaction in a bilingual culture	155
By LEE SECHREST, LUIS FLORES, AND LOURDES ARELLANO	
Social correlates of autonomy for Nigerian university students	163
By RACHEL T. HARE AND A. PAUL HARE	
Psychological time in India and America	169
By ROBERT D. MEADE	
Stereotypy in interpersonal perception and intercorrelation between some attitude measures	175
By ANEES A. SHEIKH	
Variability in the communication of affect	181
By JEFFREY G. SHAPIRO	

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Involvement and group effects on opinion change	189
By BRENDAN G. RULE AND JOHN RENNER	
Birth order and intelligence	199
By D. BURTON	
Sex, brain damage, and race effects in the progressive matrices with retarded populations	207
By HARRY E. ANDERSON, JR., FRANK E. KERN, AND CHARLOTTE COOK	
Status of frustrator as an inhibitor of horn-honking responses	213
By ANTHONY N. DOOB AND ALAN E. GROSS	
Personality and attitude correlates of political candidate preference	219
By LARRY C. KERPELMAN	
Personality characteristics, race, and grades as determinants of interpersonal attitudes	227
By EMIL J. POSAVAC AND HARRY C. TRIANDIS	
Ethnocentrism and the face of the stranger	243
By SHLOMIT EISENBERG	
The influence of death upon hero-identification among psychiatric patients	249
By WAYNE R. BARTZ	
The moral judgment of positive acts	253
By SHLOMO BREZNITZ AND SOL KUGELMASS	
Anticipated and experienced stress in sensory deprivation as a function of orientation and ordinal position	259
By PETER SUEDFELD	
CROSS-CULTURAL NOTES	
Social change and field dependence in South Africa	265
By PETER D. DU PREEZ	
Stereotyped attitudes toward the aged in West Germany and the United States	267
By WOLFGANG BRINGMANN AND GÜNTHER RIEDER	
The achievement motive in Turkish adolescents	269
By GÖKÇE CANSEVER	
Language medium and responses to the semantic differential	271
By DONALD A. CLARE	
Artistic expression and self-description with Arabs and Canadian students	273
By ROBERT D. H. SALLERY	
REPLICATIONS AND REFINEMENTS	
Comparative accuracy of Canadians' perception of compatriots and foreigners	275
By ANEES A. SHEIKH AND ROBERT C. GARDNER	
Demographic factors in the communication of promises	277
By JAMES P. GAHAGAN AND JAMES T. TEDESCHI	
Dominance-deference patterning in Thai students	281
By HARRY W. GARDINER	
BOOKS RECENTLY RECEIVED	283

CONTACT AS A VARIABLE IN INTERGROUP INTERACTION*¹

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A. INTRODUCTION

Variables that affect human behavior include the degree of interaction within groups and the degree of interaction between groups. The effects of intergroup interaction and the influential variables, however, have received scant attention from empirical investigators. The purpose of this research was to test two hypotheses relating the amount of contact and degree of intergroup interaction by means of cross-cultural data gathered from people belonging to three major group affiliations: ethnic, religious, and *ad hoc* laboratory group.

Hypothesis I. The greater the physical proximity between a person and groups of equal status to which he does not belong, the more that person will have friendly interaction with members of the outgroup.

Hypothesis II. In an environment in which many languages are spoken, people who learn the language of other groups choose outgroup members as friends.

In discussing his work in the field of interpersonal attraction Newcomb (5, p. 571) stated a principle of propinquity: "other things being equal, people are most likely to be attracted to those in closest contact with them." Physical proximity in intergroup relations has received attention from Stouffer *et al.* (8) who found that white soldiers who had Negro platoons in their company had a more favorable outgroup perception than white soldiers who did not have contact with Negro platoons. Deutsch and Collins (2), in studying integrated and segregated housing projects, concluded that housewives in the former type of dwelling reported a more favorable attitude toward Negroes than housewives in the latter type. Hypothesis II was suggested by Masuoka (4) who indicated that in Hawaii the knowledge of several languages allows a greater opportunity for interaction with people

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¹ Lester Guest was very helpful in the formulation and execution of this problem. Data analysis was facilitated by the services of the Penn State Computer Center.

from other races. Both of these hypotheses, relating intergroup interaction to opportunity for contact in the form of proximity or knowledge of languages, assume a person's ingroup and outgroup are of equal status. Newcomb *et al.* (6) and Berelson and Steiner (1) mention that contact will not necessarily increase intergroup friendship when there is outgroup discrimination.

This study attempts to demonstrate that contact increases intergroup interaction. Undoubtedly, however, the relationship could go in the opposite direction. To add support to the contact-interaction notion, laboratory groups, in which contact was experimentally manipulated, were included in the design in order to complement the correlational data from "natural" ethnic and religious groups.

B. SUBJECTS AND QUESTIONNAIRE

Ethnic group subjects were 45 students at the College of Guam who have their homes on different islands in the Trust Territory of the United Nations, such as Saipan, Kusaie, Palau, the Marshalls, Ponape, and Truk, and who speak one or more of the languages of these islands. Religious group subjects consisted of 139 students at the two high schools, Mount St. Joseph Academy and Rutland High School, in Rutland, Vermont. Eighteen laboratory groups of three males were formed from introductory psychology students at The Pennsylvania State University.

The questionnaire given to all groups asked sociometric questions about intergroup interaction. For ethnic and religious group, questions were of the type: "Think of your best three friends. To which group do they belong?" and "Which group of people do you think is the friendliest?" The questionnaire for ethnic groups allowed for 11 choices; and that for religious groups, seven. Subjects reported their own group membership after answering the sociometric questions. Ethnic group members were asked what languages they spoke so that Hypothesis II could be tested.

The questionnaire for laboratory groups, designed to be given after two groups had played a game for one-half hour, asked questions of the type: "With whom of the five people would you like to work together on a task similar to this but which would last a much longer time?" and "Whom of the five people would you think might make a good team leader for this or a similar game situation?" Three choices were allowed.

C. RATIONALE FOR TESTING HYPOTHESES AND RESULTS

In three of the four analyses of data, chi square was the statistic employed, with Yates correction for continuity. Because of a small cell frequency, a

Fisher exact test was employed in the fourth analysis. Outgroup choices were dichotomized so that cell frequencies would be sufficiently large to employ chi square. In all cases the split was made at the midpoint of the range of actual choices.

For Hypothesis I Trust Territory students living in the College of Guam dormitory were compared with students living with a Guamanian family. Chance factors determine to which place a student is assigned. Since more types of groups reside in the dormitory, it was predicted that dormitory students would have more outgroup choices than students living with a family. A chi square contingency table, as shown in Table 1, was produced with "place of residence" as the row heading and number of outgroup choices as the column heading. The numbers in the cells are the frequency counts of students having the number of outgroup choices as specified by the column heading. Examination of the table shows that dormitory students had many individuals choosing a large number of outgroups, while students living with a family had only a few individuals (16 per cent) who have many outgroup choices. The difference is significant at the .05 level.

For religious groups, data were analyzed for all the Catholic students in the Rutland, Vermont, sample. In Rutland, some Catholics attend the parochial Mount St. Joseph Academy and some the public Rutland High School. Since Rutland High School is 70 per cent Protestant and 30 per cent Catholic, it was predicted that Catholics attending the public high school would have more outgroup choices than students attending Mount St. Joseph Academy, which is more than 95 per cent Catholic. An examination of the data in Table 1 shows that about half of the public school students had many outgroup choices, while fewer than 25 per cent of the parochial school students had four to seven outgroup choices. Again, the difference is significant.

Three college students, unacquainted before the experiment, formed laboratory groups and played a game against a group of experimental confederates. The naive team could either see or not see the other team, depending upon the condition to which they were randomly assigned. Through experimental control, all groups played to a draw. The three laboratory conditions were 1) groups played against each other while they were in different rooms; 2) groups played against each other while in the same room but with a high screen separating them; 3) groups played against each other in the same room but with a low screen separating them. In the third condition the groups were in full view of each other. Specifically, it was predicted that there would be more outgroup choices in Condition 3 (face to face interaction) than in Conditions 1 and 2 in which ingroup members could not see the outgroup. Eighteen subjects, or six groups, served in each condition,

playing against the same three experimental confederates. Table 1 shows that the number of outgroup choices increases as groups become physically proximate to one another in the form of visual contact. A Fisher exact test was applied (7) and the probability was found to be less than .05.

TABLE 1
OUTGROUP CHOICES FOR PEOPLE HAVING DIFFERING AMOUNTS OF OPPORTUNITY
FOR CONTACT WITH OUTGROUPS

	Number of outgroup choices						Total
	0-1	0-3	2-3	4-7	5-8	9-11	
<i>Hypothesis I</i>							
Ethnic ^a							
Live in dorm					7	10	17
Live with family					16	3	19
							36 students
Religious (Catholic) ^b							
At public school			20	21			41
At parochial school			76	22			98
							139 students
Laboratory ^c							
Full view of outgroup	10		8				18
No view of outgroup	32		4				36
							54 subjects
<i>Hypothesis II</i>							
Ethnic ^d							
More than one language spoken besides English					13	13	26
One language besides English					16	3	19
							45 students

^a Chi square = 4.8, $df = 1$, $p < .05$.

^b Chi square = 11.9, $df = 1$, $p < .05$.

^c By Fisher exact test, $p < .05$.

^d Chi square = 4.7, $df = 1$, $p < .05$.

For Hypothesis II, Table 1 (bottom) gives the data for the Trust Territory students at the College of Guam, some of whom speak one language besides English, some of whom speak more than one language.² The table shows that half of the students who speak more than one language tended to have many outgroup choices, while more than 80 per cent of the students who speak one language tended to choose few outgroup members. The difference is significant at the .05 level.

D. DISCUSSION

These results seem to fit into a "reward" framework suggested by the work of Homans (3) and Thibaut and Kelly (9). It is proposed that it is

² For Trust Territory students, there is no relationship between place of residence and number of languages spoken.

desirable to be in close physical contact with groups of equal status, but that it is not desirable to have to travel or to make special efforts in order to interact with groups that are not physically close. Close physical contact allows one to take advantage of the rewards that are likely to be encountered through friendly interaction with groups of equal status. The members of ethnic groups who lived in the dormitory found it easy to interact with outgroup members, since they were always available, often in a neighboring room. On the other hand, ethnic group members who lived with a Guamanian family had to exert themselves if they were to have as much outgroup contact as dormitory students. The argument is similar for students who know several languages.

With high school students, it was easy for Catholics in a public school to interact with Protestants, since there were so many going to school with them; but if Catholics in the parochial school wanted to be with Protestants, they could only do so after school. Since most friendships in high school are made up of one's classmates, it was clearly easier for public school Catholics to interact with outgroup members than for parochial school Catholics. The former were able to take advantage of the rewards inherent in friendly interaction with Protestants.

In laboratory groups, subjects who have had contact with outgroup members realize that these people are often competent game players and would make good teammates—thus they often choose them for a future task. Subjects who have not had outgroup contact have not had the "reward" of seeing that the outgroup's players are competent and are not likely to choose them for a future game.

E. SUMMARY

Two hundred and thirty eight subjects, after being made cognizant of one major group affiliation, answered sociometric questions about intergroup interaction across groups classified according to that variable. The three group classifications were ethnic, religion, and laboratory group affiliation as created in a controlled experiment by the investigator. Each person answered sociometric questions by naming subgroups within his salient major classification, such as Catholics and Protestants within the major classification of religion. The sociometric questions asked about friendship choices or about friendly interaction with the members of the different subgroups within the major classification. Respondents answered the questions by telling of the groups with which they had contact.

The hypotheses being tested predicted greater intergroup interaction with

greater opportunity for contact with outgroups. Hypothesis I, tested with cross-cultural data from ethnic, religious, and laboratory groups, predicted greater interaction with greater physical proximity. Hypothesis II, tested with data from ethnic groups, predicted greater outgroup interaction when people know the language of people belonging to other groups. Both hypotheses were supported.

A reward framework for intergroup interaction was presented in which it was suggested that an opportunity for contact with outgroups of equal status is desirable, since it allows a person to take advantage of the rewards inherent in friendly outgroup contact. Rewards are likely when it is easy to interact with an outgroup, either because the group is physically close, or because a person knows the language of the other group.

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LANGUAGE AND SOCIAL INTERACTION
IN A BILINGUAL CULTURE*¹

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A. INTRODUCTION

For individuals proposing to do research in bilingual cultures, there is always a question about the importance of the language chosen for the conduct of the study. It has been shown, for example, that among bilingual Frenchwomen there were distinct differences in Thematic Apperception Test responses obtained in English and in French, and it has been suggested that the differences are congruent with the biases of English-speaking and French cultures (1). Ervin (2) has also found that bilingual English-Italian speakers had better recall for verbal materials when both learning and recall were in their first-learned language. The first author of the present study became interested in possible attitude differences associated with the use of English and Tagalog among bilingual Filipinos. For all, or nearly all, of their lives educated Filipinos are bilingual (and many are multilingual), but there are many reasons to believe that the two languages they speak have different implications for them.

Sollee (6) studied differential perceptual defense in English and Tagalog among bilingual school children. The real ingenuity of her research lay in the fact that she was able to divide her subjects into two groups: (a) those who first learned Tagalog at home and who were exposed to English at a later date, and (b) those who first learned English at home and who were exposed to Tagalog at some later time. She reasoned that the language used in the home for the child's earliest training would be of greater importance from an emotional point of view. More and earlier emotional experiences should have taken place in the context of the first-learned language. Therefore, more perceptual defense would be expected for taboo words printed in the child's first language. Her hypothesis was firmly supported.

Evidence of an anecdotal nature became available to the writers when a

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few married, bilingual Filipinos were asked in what language they made love. In spite of the fact that many of them habitually spoke English, even in their homes, all of them seemed to find the idea of making love in English quite amusing.

To study social interaction, a first, and admittedly crude, investigation was focused upon the preference for English or a Philippine vernacular in different social situations: viz, when speaking with someone of the same sex or when speaking with a person of the opposite sex. On the basis of observations reported above, it was supposed that the vernacular would be the preferred language for emotional discourse and, therefore, that mixed-sex couples would more often be speaking in the vernacular than same-sex couples. While it is not necessarily the case that conversations between mixed-sex couples would be more emotionally charged, it seemed probable to all three writers that such would be the case among Filipino college students.

TABLE 1
LANGUAGE SPOKEN BY PAIRS OF BILINGUAL PERSONS OBSERVED IN
CASUAL INTERACTION ON A UNIVERSITY CAMPUS

Sexes of pair	English		Philippine dialect	
	<i>N</i>	%	<i>N</i>	%
Male-Male	14	18	64	82
Female-Female	12	14	79	86
Male-Female	18	28	47	72

The University of the Philippines is a large, state supported, coeducational school located in Quezon City. Although it draws students from all over the Philippines, the greatest proportion of them are Tagalog speaking. The school is coeducational, but Filipino students are, on the average, a year or two younger than comparable American students; and the current social mores do not promote obviously close relationships between students of the opposite sex.

Several Filipino student observers were hired to go around campus and simply note the occasions on which two persons were talking to each other, the sexes of the pair, and whether they were speaking in English or one of the many Filipino dialects. No special efforts were made to obtain a genuinely *random* sample of two-person conversations on campus, but the observations obtained were quite diverse with respect to physical location and time of day. The results are given in Table 1 in the form of a cross-classification for language and sex of the pair involved.

Contrary to expectations, the mixed-sex couples were *more* likely to be speaking English than same-sex pairs, the mixed-sex couples differing significantly from the same-sex couples ($X^2 = 4.65$, $df = 1$, $p < .05$). Perforce

the authors must invent an explanation for their findings, and they believe that it lies in the nature of boy-girl relations in the Philippines, relations still colored strongly by the Spanish tradition: in public, boys and girls are expected to keep their feelings toward each other under strict control, and public physical contact between them is all but prohibited. It is our tentative hypothesis that English tends to be used somewhat more frequently in boy-girl conversations because it is the "language of the intellect" and permits greater control of the social interaction.

The above observations and considerations suggested the possibility that in this bilingual culture social interactions might be influenced by the language chosen for the interaction: e.g., use of English might tend to produce a more formal and "distant" interaction. Previous work by Sommer (7, 8, 9) and Leipold (4), as well as the general theorizing of Hall (3), indicated that spatial distance between interacting persons might be taken as an index of social distance. In our experiment it was expected that the language used between two Filipinos might affect the social distance and hence the physical distance between them.

B. METHOD

The experiment was conducted in a room about 25 feet long, opening off a corridor. The right side of the room as the subject entered was screened off by movable screens, but the subject could not see anything behind them. At the end of the room away from the door was a chair where the experimenter was seated. Subjects were recruited from the corridor by being handed a card by a second experimenter, on which was typed a brief request to participate in a "perception" experiment that would take only a very few minutes. Then, depending on the condition, the instructions, which were written in English, requested the subject either to go ahead and enter the room or wait until he was called. These were the "No invitation" and "Invitation" conditions. If the subject was in the Invitation condition, he very shortly was requested to "Come in, please," either in English or in Tagalog.

When the subject entered the room, he saw either a male or a female experimenter, all seniors or graduate students, seated at the far end of the room. It was up to the subject to determine how closely he would approach. As soon as he stopped his forward progress, an observer hidden behind the screen noted the distance in terms of six-inch units from the desk, small marks having been placed on the wall to facilitate the measurement. And at that time the experimenter seated at the table asked the first of four innocuous, standard questions. These questions were asked either in English or Tagalog according to the con-

dition. After pretesting on 30 subjects, the last 166 were asked: (a) What do you think of Tagalog movies? (b) What is your favorite kind of music? (c) Where would you like to spend a vacation? (d) What can you say about the administration? Questions were asked in random order for each subject. The subject's answers were recorded verbatim, and later a score amounting to the total number of words emitted was assigned to each subject.

When the subject had finished speaking, the distance from the desk was noted again, and the subject was given a simple visual perception task as a "cover" for the experiment; then was asked about his age, course of study, and familiarity with the experimenter. Afterwards he was thanked for his participation and dismissed.

1. Design

The social distance experiment involved four variables with two values of each. The language used by the experimenter was either English or Tagalog; the subject either received a verbal invitation to enter the room or did not; the experimenter was either male or female; and the subject was either male or female. In addition, the amount of speech was analyzed as a second measure of the social interaction. Thus, the design produced a $2 \times 2 \times 2 \times 2$ analysis of variance for both distance and amount of speech, but in the case of distance there were two measures so that a repeated measures analysis was required.

2. Experimenters

Six male and six female experimenters were employed in the experiment and each tested from three to 32 subjects. An effort was made to have each experimenter test subjects in every condition and in equal numbers, but that desideratum was impossible to achieve, in part, because availability of subjects depended on the number of persons passing in the corridor at any one time. Nonetheless, there were no strong biases associated with experimenters.

3. Subjects

Subjects were all college students and were from all year levels except graduate. An effort was made to get equal numbers of subjects in every condition, but that proved difficult; and the ultimate number per cell ranged from nine to 14. Some few subjects were lost because of errors or erratic behavior or previous familiarity with the experimenter. A total of 196 subjects provided usable data for the experiment.

C. RESULTS

The data for social distance as reflected in linear distance were analyzed by an analysis of variance for repeated measures, with the use of an unweighted

means solution in view of the unequal cell frequencies (10). There were only two significant findings for the between-subjects part of the analysis and one within subjects. Sex of subject was significant as a main effect, and sex of subject interacted with sex of experimenter to produce another significant finding. As can be seen from the means given in Table 2, males made a closer approach than females. Males also approached more closely when the experimenter was a male, while females maintained a particularly great distance with a male experimenter. No other main effect even approached significance, *including language spoken*, for which the F was less than 1.00. Nor were any other in-

TABLE 2
MEANS OF DISTANCE AND VERBAL PRODUCTIVITY MEASURES FOR EXPERIMENTAL
VARIABLES INVOLVED IN SIGNIFICANT FINDINGS

Variable	Mean distance in ft.	Mean number words
English spoken	5.27	22.96
Tagalog spoken	4.78	17.77
Male subjects	4.03	24.44
Female subjects	6.02	16.29
Male S-Male E	3.29	
Male S-Female E	4.95	
Female S-Male E	7.06	
Female S-Female E	4.80	

teractions close to significance, the largest F being 1.08 for the quadruple interaction. The only significant finding within subjects was for measures, the F being significant at well beyond the .01 level. There was a strong tendency for subjects to decrease distance during the time of the interaction, perhaps a reflection of decreasing discomfort. No variables interacted in any way with measures, most F s being less than 1.00.

For amount of speech, the analysis of variance, again for unweighted means owing to unequal cell frequencies, only two main effects were significant, the means of which are reported in Table 2. Both language and sex of subject produced significant F s. Use of English by the experimenter produced longer replies to the questions than did Tagalog ($F = 5.80$; $df = 1,150$; $p < .05$), and males emitted longer replies than females ($F = 14.21$; $df = 1,150$; $p < .01$). No other findings were significant, the largest F being 2.50 for the quadruple interaction.

D. DISCUSSION

On the basis of the investigations reported above, the authors are led to conclude that among Filipino bilinguals in a university setting choice of language is of little significance for social interaction. To be sure, the results of the first investigation suggest some bias in the language *preferred* in different kinds of interactions, but the results of the experiment in which language employed

was manipulated indicate no effect on social distance produced by employing either English or Tagalog. Apparently the use of English or Tagalog was optional. Lynch, *et al.* (5) have found that language skill—i.e., in the dialect—plays but a small part in the impression made by Peace Corps volunteers in the Philippines. Even the findings of the first investigation are attenuated by noting that English was relatively little used for informal conversation and hence can only have limited effects. That the use of Tagalog in questioning produced briefer replies is of definite interest, but the import of that finding will be ambiguous until it is known whether Tagalog is inherently more efficient in communicating ideas of the kind expressed in response to the questions used here. However, an analysis of 25 Tagalog and 25 English replies to Tagalog questions showed no difference in length of reply, suggesting that it may be the language of the question rather than the response that is important.

Of considerable interest is the fact that, except for the use of occasional words having a special meaning not easily rendered in English, all subjects questioned in English answered completely in English. But many questioned in Tagalog answered in English or shifted to English during their answer (about 50 per cent). Several stated that they were accustomed to answering in English questions of the type asked and felt more comfortable in doing so. Yet, as can be seen, English is apparently not the preferred language of communication among these students in their casual interpersonal dealings. The authors are left to conclude, tentatively, that English is probably the preferable language for matters of an affectively neutral cast; but to guess that, if issues of a more intimate nature were being probed, there might be advantages to the use of common dialect.

The linear distance measure of social distance seemed to tap an important aspect of the social interaction between subject and experimenter. The fact that males showed less "distancing" than females and that females and males produced especially great distance when mixed are quite consistent with Filipino culture. These suppositions are supported by the amount of speech emitted, with males again being bolder than females. The findings reported here, therefore, seem relevant to social interaction in the Philippine culture.

E. SUMMARY

The present study grew out of a concern for the possible effects of language on experimental work done in bilingual cultures. In an initial study of casual conversations on a Philippine university campus, it was found that the great majority were being conducted in a local dialect although the university's language of instruction is English. English was more likely to be the

language of conversation when the couples speaking were of mixed sex. A second study focused on the effects of language on social distance as reflected by physical distance in an experimental setting. The language used by the experimenter did not affect distance taken by his subjects, but cross-sex experimenter-subject pairs showed greater distancing. Use of English by the experimenter did produce longer replies by subjects.

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SOCIAL CORRELATES OF AUTONOMY FOR NIGERIAN UNIVERSITY STUDENTS*

Temple University and Haverford College

RACHEL T. HARE AND A. PAUL HARE

A. INTRODUCTION

In 1961-1962 LeVine collected accounts of dreams and written essays on the topic of success from several samples of secondary school students in Nigeria, representing the three major tribal groups of Hausa, Yoruba, and Ibo (12). Analyzing these materials for evidence of need for achievement and "obedience-social-compliance," he found consistent differences on several measures between the Hausa of the North and the two Southern tribes, but the apparent differences between Yoruba and Ibo were not statistically significant. The Hausa were lower on need for achievement and higher on "obedience-social-compliance."

Two years after LeVine had collected his data the authors surveyed samples of students in three Nigerian universities to test the hypothesis that Ibos would score higher than Yoruba on the value dimension of autonomy. Since the autonomy scale of the authors was derived from the Omnibus Personality Inventory of the University of California (13) which contains some of the items from the original F Scale (1), the authors were in effect testing the same dimension as LeVine's "obedience-social-conformity," but with the direction of prediction reversed. In addition to the autonomy items, each of their subjects filled out a social background questionnaire.

LeVine's description of the cultural differences between the main tribal groups in Nigeria is the most recent in a series of reports which have made essentially the same points. [For Yoruba see (2, 4, 9, 10, 11, 16) and for Ibo see (5, 7, 14).] The Yoruba, numbering about 10 million people, have a highly stratified society, prescribed relationships and ranks related to seniority and lineage, elaborated religions, and severe childrearing practices. In contrast, the Ibo, a somewhat smaller group, have long been characterized by considerable entrepreneur activity and are recognized as tolerant, equalitarian, and individualistic. They are an "open society," noteworthy for having no headmen or chiefs.

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Based on these tribal differences, the prediction to be tested was that the stratified, power oriented society of the Yoruba would reinforce authoritarian attitudes, while the individualistic social structure of the Ibo would reinforce autonomous attitudes [see (1, 6)]. Furthermore, it was expected that individuals from less traditional families, who were firstborn children, older, and Protestant rather than Catholic, would be more autonomous.

B. METHOD

1. *Subjects*

The subjects of study were over 900 students at three Nigerian universities: Ibadan, the national university which was in the Yoruba region; Ife, a regional university for the West, with a campus then adjacent to Ibadan; and Nsukka, the University of the East, which was in the Ibo region.

Of the total study group, 678 Yoruba and Ibo were included in the present analysis; an additional 107 represent five criterion groups which were used in the development of the Autonomy Scale. Of the remainder, 121 came from other tribes, while the rest were eliminated from the sample because they were neither Protestant nor Catholic, or because some crucial background variable was missing. The small number of females were eliminated, since there were not enough to test male-female differences. The vast majority of Nigerian students were male.

The subjects from the University of Ibadan were divided into two sets: those who volunteered to participate in a communication network experiment (8) and those who were given the questionnaires in a classroom during a regular class period. The students at Nsukka and Ife were given the questionnaire during regular class periods. The number of Yoruba and Ibo students in each sample is given in Table 1 together with their average score on the Autonomy Scale.

2. *Scale Development*

Each subject was asked to indicate whether 50 value statements were true or false. Forty of these items were taken from the autonomy subscale of the Omnibus Personality Inventory and 10 items were from other scales. Some of the 40 autonomy items were reversed in content so that as a result 22 items would have to be answered "false" and 18 items "true" to receive the highest score on autonomy. Four of the false items which did not discriminate between the criterion groups were not used so that the final scale would be balanced with 18 true and 18 false items, thus avoiding the chronic problem of response bias (3, 15). Sample items from the resulting scale are (a) Society puts too much restraint on the individual—TRUE; (b) We should respect

the work of our forefathers and not think we know better than they did—
FALSE.

Five criterion groups were obtained which were ranked on autonomy by two Nigerian faculty members at the University of Ibadan. The first set of subjects (Church School) was a sample of students from a grammar school (high school) operated by a fundamentalist church in Ibadan, who were judged to be least autonomous. Next was a set of students from the University of Ibadan who belonged to conservative religious groups (Religious Con-

TABLE 1
NUMBER OF SUBJECTS AND AVERAGE AUTONOMY SCORES IN SAMPLES
OF YORUBA AND IBO STUDENTS

Sample	Yoruba		Ibo	
	Number of subjects	Average autonomy	Number of subjects	Average autonomy
Communication Network	78	18.65	80	18.60
Ibadan	85	18.45	90	18.09
Nsukka	49	18.18	239	17.65
Ife	50	17.78	8	16.76

servatives). Next were two social fraternities for university students, one more conservative (Club A) and the other more radical (Club B). Finally there was a set of students selected by the Dean as representing the most liberal students on the campus (Liberals).¹ The average autonomy scores and the number of students in each of the sets are given in Table 2. The observed tendency for the members of the more autonomous sets to have the highest test scores for autonomy is significant at the .01 level (F test). Also given in Table 2 is the average score for a set of 36 male undergraduates from Haverford College. Their score of 27.25 is significantly higher than the highest of the Nigerian criterion groups which has a score of only 21.13. Since the authors had, of course, expected the Haverford students to be more autonomous, this finding combined with the evidence from the criterion groups suggests that the autonomy scale is measuring what it purports to measure.

C. RESULTS

Contrary to the authors' hypothesis, the data of Table 1 indicate that the Yoruba have higher scores in every case. However, none of these differences is

¹ Although the majority of the students in the study are Ibo (see Table 1) 80 per cent or more of the students in the two most conservative groups (Church School and Religious Conservatives) are Yoruba, while no more than 50 per cent of the three more liberal groups are Yoruba. In each case only a minority of the other tribes are Ibo. Thus, the more liberal criterion groups tend to include students who are neither Yoruba nor Ibo.

significant (t test). There are too few differences to reach significance when a sign test is used even though four out of four differences are in the expected direction. In any event, at this level of analysis there is no reason to conclude that the Ibo are higher on autonomy.

To control for additional sources of variance in the autonomy scores, each of the samples in Table 1 was further divided by religion into Protestant and

TABLE 2
NUMBER OF SUBJECTS AND AVERAGE AUTONOMY SCORES FOR CRITERION GROUPS
AND HAVERFORD COLLEGE STUDENTS

Sample	Number of subjects	Average autonomy
Church School	27	15.33
Religious Conservatives	22	17.68
Club A-Conservatives	21	20.00
Club B-Radical	13	20.69
Liberals	24	21.13
Total	107	
Haverford College	36	27.25

Catholic, by birth order into firstborn and other born, by age into young (20 to 23 years) and old (24 to 28 years), and by father's occupation into those whose fathers were farmers and all others. Some categories were omitted when the number in a set fell below about 10 subjects. As a result it was possible to compare differences between firstborn and others, young and old, farmers and nonfarmers in 80 sets of subjects matched in 40 pairs, while for tribe and religion 48 samples or 24 matched pairs were available. The smaller number in the latter categories was largely because there were only a few Ibo at Ife, and few Yoruba who were Catholic in any university.

For some comparisons the Ibo were actually higher on the average than the Yoruba. For the greatest number of paired comparisons possible with the data, in 13 of the 24 cases the Ibo were higher. However, this difference is far from significant (sign test).

Table 3 gives the number of subjects and average autonomy scores in sets which are sorted by university, tribe, and religion.

Protestants were *less* autonomous in three out of four sample comparisons for the Yoruba and *more* autonomous in all four comparisons for the Ibo. It is tempting to hypothesize, after the fact, that there is something special about Yoruba Catholics. However, the number in each sample is very small (four to seven subjects) and the differences for Yoruba were not significant. For Ibo, three of the four differences were significant at the .05 level (t test). Further, for the largest number of possible paired comparisons with these

data, Protestant Ibos were higher than Catholic Ibos in 17 out of 24 cases (significant at .05 level with the use of the sign test). Thus, for Ibos at least, the expected result that Protestants would be higher on autonomy than Catholics was supported.

It was found that, contrary to the expectations of the investigators, firstborn students were not more autonomous than later born (they were higher in only 19 out of 40 cases, which is not different from chance); however, students

TABLE 3
NUMBER OF SUBJECTS AND AVERAGE AUTONOMY SCORES FOR SAMPLES CONTROLLED
FOR UNIVERSITY, TRIBE, AND RELIGION

	Yoruba				Ibo			
	Protestant		Catholic		Protestant		Catholic	
	N	Average	N	Average	N	Average	N	Average
Communication								
Network	63	18.68	7	16.71	43	19.37	38	17.74
Ibadan	68	18.26	7	18.86	37	18.70	50	17.74
Nsukka	30	18.47	6	18.67	92	18.07	142	17.27
Ife	44	17.55	4	19.50	3	19.67	5	15.00

whose fathers were farmers were low on autonomy (30 out of 40 cases, significant at .01 level with the use of the sign test), and younger students were higher than older students (28 out of 40 cases, significant at .01 level).

D. DISCUSSION

The authors, like LeVine, had expected the younger students to be *less* autonomous. If what was found by the authors is correct, it raises a question about LeVine's sample. Since he had difficulty finding enough Hausa students in secondary school for his study, he included 19 students from the Executive Training Program at the Institute of Administration in Zaria (Northern Region) in his sample of 65 Hausa. Most of these men had served in government, were older on the average than the other subjects, and a larger proportion of them were married (11, p. 45). LeVine felt that this would not make any difference in his results, but if the older men are less autonomous, as the present data suggest, then some of the apparent differences between Hausa and other tribes may be due to the presence of these older men in the sample.

E. SUMMARY AND CONCLUSIONS

Comparisons of matched samples of Yoruba and Ibo university students in Nigeria indicated that students who were younger and those whose fathers were not farmers were higher on autonomy. Among the Ibo, Protestants were

more autonomous than Catholics. No significant differences were found between Ibo and Yoruba or between firstborn and others. These results tend to support the previous *findings* of LeVine, but not his *conclusion* that there were differences between Ibo and Yoruba on need for achievement and "obedience-social-compliance."

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PSYCHOLOGICAL TIME IN INDIA AND AMERICA*¹

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A. INTRODUCTION

Triplett (11), Doehring (3), and Clausen (2) have shown that there was no reliable difference in the apparent length of psychological time when it was experienced during an empty or filled interval. In these studies, the filled intervals usually employed some kind of sensory stimulation to which *S* attended, while in the empty interval such stimulation was absent.

On the other hand, quite consistent differences in the duration of psychological time have been reported between conditions where *S* was occupied by some kind of activity and when an objectively equal period of time was occupied by an absence of activity. Axel (1) reported that a period of time whose objective duration was between 15 and 30 seconds seemed significantly longer when *S* was sitting idly or tapping with a stylus than when he was doing such things as solving analogies or crossing out letters on a page. Gulliksen (4), who used an objective interval of 200 seconds, found overestimation for such activities as sitting idly, listening to a metronome, pressing a spot on the skin, or holding the arms outstretched, and underestimation for such activities as doing division problems or taking dictation. Similar results were reported by Loehlin (6), who used a two-minute interval as the objective time period.

There appear to be two rather distinct kinds of activities being used in these last three experiments. Sitting idly, listening to a metronome, tapping with a stylus are all passive in nature and, as a result, *S* would seem to be accomplishing nothing or getting nowhere. On the other hand, such activities as doing arithmetic, taking dictation, and working analogies are activities which involve skill on the part of *S* and also yield information to *S* concerning how much he has accomplished at any given moment. Conditions such as these allow *S* to experience progress, while those activities in which *S* gets no such feedback deprive him of information about his progress. According to experi-

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¹ This research was conducted while the author was Fulbright Professor at Balwant Rajput College, Agra, U. P. India. The author expresses his gratitude to Sri Kali Charan for his assistance in collecting the data for the Indian portion of the study.

icans. The results for the Brahmin, Vaisya, Sudra, and Muslim communities are not comparable to those obtained for Americans—there was no overestimation of time for the passive period.

Further explanation of why three of the subcultures of India are congruent with Americans with respect to this phenomenon may be found in the theory and research of McClelland (7) and Meade (10). According to McClelland, individuals who are high in motivation for achievement view time as a com-

TABLE 1
PSYCHOLOGICAL TIME IN A PASSIVE CONDITION FOR EIGHT CULTURAL GROUPS COMPARED TO AN ACTIVE TIME PERIOD OF SIX MINUTES

Cultural group	Time estimate passive condition in minutes	<i>SD</i>	<i>t</i>
American	8.3	2.17	4.60*
Brahmin	6.3	1.86	.07
Kshatrya	7.3	1.93	2.97*
Vaisya	6.6	2.11	1.30
Sudra	6.4	1.82	.09
Sikh	8.1	2.10	4.38*
Parsee	7.9	2.02	4.13*
Muslim	5.9	1.79	.02

* $p < .01$.

modity and consider it as having significant value in terms of their own potential accomplishment. Conversely, individuals who are low in achievement motivation consider time to be of much less value. It is to be expected, then, that there would be a difference in attitude between those who are high and those who are low in achievement motivation toward the passive condition, which may be viewed as time wastage, and the active condition which provided something to be accomplished. Meade has shown that American college students who are high in motivation for achievement experience a given time interval as shorter when they are experiencing progress toward a goal than when no such progress is evident; subjects who are low in achievement motivation show little difference in psychological time between progress and no progress conditions.

The Indian Ss who are under consideration here seem to fit the general pattern of motivational divergencies with respect to psychological time found in American Ss by Meade. Although there are no achievement motivation data available on these subcultures, it is generally accepted that Parsees, Sikhs, and Kshatrya are high achievers in the fields of business, agriculture, and technology. Brahmins and Sudras have generally been thought of as being less concerned with material things and not as much concerned with achievement.

The Muslim and Vaisya groups considered here are also low in achievement (5).

While there are many diversifications within the various social communities of India, there remain communalities of tradition and expectation within these groups, one of which appears to be the value of time. The results of this investigation supplement those of other experiments on psychological time which show the effects of motivation and accomplishment. In this case, the cultural conditioning of the group is assumed to have determined the motivation, while the active condition of the experiment provided the atmosphere of accomplishment and the passive condition prevented such experience of accomplishment.

E. SUMMARY

Twenty male college students from America and 20 each from seven social communities in India estimated time for a six-minute period spent doing nothing in comparison to an equal period spent working on mathematical problems. Americans, Kshatryas, Sikhs, and Parsees estimated the idle period as significantly longer than the active period, while Brahmins, Vaisyas, Sudras, and Muslims estimated the two periods as being the same length. Results are interpreted as being consistent with earlier studies which have shown that *Ss* with high achievement motivation estimate time intervals in situations involving progress as shorter than when there is no progress. The Indian subcultures which estimated time this way are generally thought of as having higher achievement motivation, while those which judged both periods as equal are lower in achievement motivation.

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mental results obtained by Meade (8, 9, 10), experience of progress results in shorter psychological time than does lack of progress. Therefore, it would be expected that such activities as arithmetic and working on analogies which provide some information feedback relative to accomplishment would result in shorter time estimates than passive situations, such as listening to a metronome or pressing on the skin. A similar explanation can be offered to show why intervals occupied by simple sensory stimuli are estimated as no longer than those where such stimulation is absent. Neither produce sufficient feedback for *S* to use as cues to his progress.

All the studies mentioned above were conducted with American *Ss* whose cultural conditioning has taught them to value personal progress and accomplishment. Thus, it would be expected that these *Ss* would take note of information available to them concerning their progress or accomplishment. However, in cultures which do not place great significance on personal accomplishment, these experimental findings relevant to psychological time may not appear. In India, for example, some of the social communities have traditionally stressed that what one attains in life bears almost no relationship to the effort or skills of the individual in question, while other social groups in the same country value such personal efforts highly as prerequisites to personal accomplishment (5).

The objective of the present study was to determine whether the duration of psychological time in several subcultures in India is affected by what *Ss* do in that interval, as it appears to be in America. Specifically, do individuals in the American culture and members of several subcultures in India experience psychological time differently (*a*) when they are actively engaged in skilled work that results in an observed output, from (*b*) when they are passively engaged?

B. METHOD

1. *Subjects*

Subjects were 140 male Indian college students, 20 each from the Brahmin, Kshatrya, Vaisya, Sudra, Sikh, Parsee, and Muslim communities, and 20 male American college students. Each *S* was used as his own control in this study.

2. *Apparatus*

A mimeographed page of mathematical problems.

3. *Procedure*

The experimental sessions were conducted in a windowless room whose sole furnishings were a table and two chairs. All *Ss* were tested individually, the

Indians by an Indian experimenter and the Americans by an American experimenter. Upon entering the room *E* asked to borrow *S*'s watch if he had one; this procedure deprives the *S* of means of objective time estimates.

The experimental session consisted of two parts, each of six minutes duration. During the passive session *S* sat alone in the experimental room. During the active session, he was engaged in working on the mathematics problems. The order of experimental conditions was counterbalanced for each subcultural group.

When *S* had been for six minutes each in the active and passive conditions, he was asked these questions:

1. For some time now you have been working either on the mathematical problems or sitting alone in this room. Everyone has his own private and subjective feelings about things like this. I would like to know from you how long it *seemed* to you that you were doing each of these. To begin with, which period seemed longer to you, the period spent sitting alone in this room or the period spent working on the mathematics problems? I'm not interested in the accuracy of your judgment but merely how long it subjectively appeared to you.
2. Now let us say that the mathematics problems occupied exactly six minutes. Using that six minutes as a standard, how much longer (shorter) did the idle period seem to you? Again, I am not interested in the accuracy of your judgment; I'm merely concerned with how much longer (shorter) it seemed to you.

The answer to the second question subtracted from or added to the six-minute time-period constituted the dependent variable.

C. RESULTS

Table 1 shows the time estimates for the passive condition of the experimental session and the statistical analysis of the results for each of the nine subcultural groupings. The null hypothesis that these time estimates were not reliably different from the six-minute active interval was evaluated by the *t* test whose results are also presented in Table 1. At the .01 level of confidence, Americans, Kshatrya, Sikh, and Parsee groups estimated the time spent in the passive condition as being the longer. Time estimates for the Brahmin, Vaisya, Sudra, and Muslim social communities under the passive condition were not significantly different from those made under the active condition.

D. DISCUSSION

Inspection of these data reveals that the results obtained for the Kshatrya, Sikh, and Parsee communities are similar to those obtained for Americans in this study and are comparable to those obtained in the earlier studies of Amer-

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STEREOTYPY IN INTERPERSONAL PERCEPTION AND INTERCORRELATION BETWEEN SOME ATTITUDE MEASURES*¹

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A. INTRODUCTION

It has generally been assumed that a person's stereotypes about a group affect his perception of individual members of that group. The only studies that bear on this question have, however, all investigated the effects of stereotypes on the perception of photographs (3), recorded voices (6), or descriptions of people (2). One purpose of the present study was to test the above assumption with the use of live persons as the objects being perceived. Specifically, it was predicted that to the extent that a more definite stereotype exists towards a minority group (people from India) than towards the majority group (Canadians), the majority group member's evaluation of individuals from the minority group would be more dependent upon stereotyped reactions than would evaluations of majority group members. A secondary objective of the present investigation was to determine the intercorrelation between certain attitude measures relevant to interpersonal perception.

B. METHOD

1. *Subjects*

The Ss were 25 students from an undergraduate psychology class at the University of Western Ontario.

2. *Procedure*

The Ss were tested in two sessions. During the first session, they rated four individuals (two Indians and two Canadians) on 25 semantic differential scales (7) after they were interviewed individually concerning their views on films and books. The four interviewees were male graduate students between the ages of 24 and 30 years. The experimenter knew all four individ-

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¹ A different analysis of a portion of the data discussed here has been published elsewhere (11). The writer wishes to express his sincere appreciation to Dr. R. C. Gardner for his advice and assistance throughout the course of the investigation.

uals who were quite different from one another. One Indian was very well built, neatly dressed, and rather reticent. He was wearing a turban and a beard and was about 24 years old. The other Indian had no turban and beard. He was rather bulky, talkative, very casually dressed, and was about 30 years old. Of the two Canadians, one was a short, very scientifically minded, graduate student of psychology, and the other was a tall, bald, graduate student in the Department of Philosophy.

To maintain the naturalness of the study the interviews were not completely structured. These four individuals were different from one another and it was in the interest of the study that these differences be conveyed to the subjects. To approximate everyday situations more closely, it was crucial that the subjects see how these four persons would naturally behave.

A week later the same subjects rated "the people from India in general" and "Canadians in general" on the same semantic differential scales used in the first session.

In addition, the subjects also responded to a Likert type rating scale which consisted of items from Dogmatism Scale (8, 9), Ethnocentrism Scale (1), and Attitude Toward Indians Scale (10).

The third task was to choose adjectives from a list (5) that the subjects believed characterized each of the two ethnic groups (Indians and Canadians). They were instructed to add any additional words which they felt necessary, even if they were not included in the list provided.

C. RESULTS

1. Those traits which account for the first most frequent 50 per cent of the choices for Indians were courteous, friendly, conservative, spiritualistic, very religious, artistic, honest, peace-loving, and tradition-loving. Those chosen similarly for Canadians were conservative, honest, friendly, intelligent, imitative, sportsmanlike, pleasure-loving, peace-loving, conventional, practical, materialistic, and reserved. Those traits common to both nationalities were honest, peace-loving, friendly, and conservative.

2. The mean number of words used per subject to characterize Indians and Canadians was 8.36 and 10.00 respectively. The difference between the two means was significant at less than .01 level ($t = 3.72$), indicating that the subjects used a significantly greater number of words to describe Canadians than to describe Indians.

3. The indices² of stereotyped perception were significantly lower (more

² On a given trait, a subject's index of stereotyped perception for each interviewee was determined by the formula: $(X - X_g)^2$, where X = the subject's rating of the

stereotypy) for the Indian than for the Canadian interviewees for 12 ratings out of the 25, significantly higher in no cases.

4. When measures of attitude toward Indians, evaluation³ of Indians, dogmatism, and ethnocentrism were intercorrelated, five significant relationships emerged, which are, in order of magnitude (see Table 1): (a) a positive correlation between ethnocentrism and dogmatism ($r = .65$), (b) a positive correlation between the evaluation of Indian interviewees, and "attitude toward Indians" ($r = .58$), (c) a positive correlation between the evaluation of Indian interviewees and the evaluation of "Indians in general" ($r = .52$), (d) a negative correlation between the evaluation of "Indians in general" and dogmatism ($r = .44$), and (e) a positive correlation between the evaluation of "Indians in general" and "attitude toward Indians" ($r = .41$).

TABLE 1
CORRELATION MATRIX OF ATTITUDE MEASURES

	1	2	3	4	5
Attitude toward Indians	x	.41*	.58**	.22	-.07
Evaluation of Indians in general		x	.52**	-.08	-.44*
Evaluation of Indian interviewees			x	.14	.03
Ethnocentrism Scale				x	.65**
Dogmatism Scale					x

* $p < .05$.

** $p < .01$.

D. DISCUSSION

Since the actual design of the study involves the comparison of Canadians' perceptual judgments of individuals from India and Canada, it is first necessary to determine whether a more definite stereotype exists among them concerning people from India than concerning Canadians.

Katz and Braly (4) define one index of ethnic stereotypes as those adjectives, most frequently chosen from an adjective checklist, which account for 50 per cent of the group's total selections. They measure the "definiteness" of an ethnic stereotype by the number of adjectives included in the index. They suggest that if a number of subjects agree on the adjectives which describe an ethnic group, then their stereotype of that group is more definite than their

interviewee, and X_g = the subject's rating of the ethnic group to which the interviewee belongs.

³ For this only the scores on those semantic differential scales that seemed to be evaluative in nature were considered.

uals who were quite different from one another. One Indian was very well built, neatly dressed, and rather reticent. He was wearing a turban and a beard and was about 24 years old. The other Indian had no turban and beard. He was rather bulky, talkative, very casually dressed, and was about 30 years old. Of the two Canadians, one was a short, very scientifically minded, graduate student of psychology, and the other was a tall, bald, graduate student in the Department of Philosophy.

To maintain the naturalness of the study the interviews were not completely structured. These four individuals were different from one another and it was in the interest of the study that these differences be conveyed to the subjects. To approximate everyday situations more closely, it was crucial that the subjects see how these four persons would naturally behave.

A week later the same subjects rated "the people from India in general" and "Canadians in general" on the same semantic differential scales used in the first session.

In addition, the subjects also responded to a Likert type rating scale which consisted of items from Dogmatism Scale (8, 9), Ethnocentrism Scale (1), and Attitude Toward Indians Scale (10).

The third task was to choose adjectives from a list (5) that the subjects believed characterized each of the two ethnic groups (Indians and Canadians). They were instructed to add any additional words which they felt necessary, even if they were not included in the list provided.

C. RESULTS

1. Those traits which account for the first most frequent 50 per cent of the choices for Indians were courteous, friendly, conservative, spiritualistic, very religious, artistic, honest, peace-loving, and tradition-loving. Those chosen similarly for Canadians were conservative, honest, friendly, intelligent, imitative, sportsmanlike, pleasure-loving, peace-loving, conventional, practical, materialistic, and reserved. Those traits common to both nationalities were honest, peace-loving, friendly, and conservative.

2. The mean number of words used per subject to characterize Indians and Canadians was 8.36 and 10.00 respectively. The difference between the two means was significant at less than .01 level ($t = 3.72$), indicating that the subjects used a significantly greater number of words to describe Canadians than to describe Indians.

3. The indices² of stereotyped perception were significantly lower (more

² On a given trait, a subject's index of stereotyped perception for each interviewee was determined by the formula: $(X - X_g)^2$, where X = the subject's rating of the

stereotypy) for the Indian than for the Canadian interviewees for 12 ratings out of the 25, significantly higher in no cases.

4. When measures of attitude toward Indians, evaluation³ of Indians, dogmatism, and ethnocentrism were intercorrelated, five significant relationships emerged, which are, in order of magnitude (see Table 1): (a) a positive correlation between ethnocentrism and dogmatism ($r = .65$), (b) a positive correlation between the evaluation of Indian interviewees, and "attitude toward Indians" ($r = .58$), (c) a positive correlation between the evaluation of Indian interviewees and the evaluation of "Indians in general" ($r = .52$), (d) a negative correlation between the evaluation of "Indians in general" and dogmatism ($r = .44$), and (e) a positive correlation between the evaluation of "Indians in general" and "attitude toward Indians" ($r = .41$).

TABLE 1
CORRELATION MATRIX OF ATTITUDE MEASURES

	1	2	3	4	5
Attitude toward Indians	x	.41*	.58**	.22	-.07
Evaluation of Indians in general		x	.52**	-.08	-.44*
Evaluation of Indian interviewees			x	.14	.03
Ethnocentrism Scale				x	.65**
Dogmatism Scale					x

* $p < .05$.

** $p < .01$.

D. DISCUSSION

Since the actual design of the study involves the comparison of Canadians' perceptual judgments of individuals from India and Canada, it is first necessary to determine whether a more definite stereotype exists among them concerning people from India than concerning Canadians.

Katz and Braly (4) define one index of ethnic stereotypes as those adjectives, most frequently chosen from an adjective checklist, which account for 50 per cent of the group's total selections. They measure the "definiteness" of an ethnic stereotype by the number of adjectives included in the index. They suggest that if a number of subjects agree on the adjectives which describe an ethnic group, then their stereotype of that group is more definite than their

interviewee, and X_g = the subject's rating of the ethnic group to which the interviewee belongs.

³ For this only the scores on those semantic differential scales that seemed to be evaluative in nature were considered.

stereotype of another group about which there is less agreement. In this study, fewer adjectives were included in the index for "people from India" (nine) than for Canadians (twelve). Although appropriate statistical tests are not available for this index, it is clear that somewhat more agreement existed on what Indians are like than on what Canadians are like. This observation is further supported by the analysis in terms of the mean number of words used per subject to characterize Indians and Canadians. The subjects used a significantly greater number of words to describe Canadians than to describe Indians ($p < .01$).

Because of this greater definiteness of the Indian stereotype, it is reasonable to expect that the subjects' perception of Indian individuals will be more strongly influenced by the stereotypes than will their perception of Canadians. The results presented in Table 1 tend to confirm this expectation. On 12 out of 25 semantic differential scales, the tendency to stereotype one's perception of Indian individuals was significantly greater than for one's perception of Canadian individuals.

The composite picture suggested by these above-mentioned 12 scales is consistent with the composite stereotype suggested by those adjectives selected from the checklist to characterize people from India. This finding, it should be emphasized, is independent of the design of this study, since the measures of stereotyped perception were concerned with each subject's evaluation (or stereotype) of the outgroup. It appears that although an individual may have private stereotypes about an ethnic group, these stereotypes will not be sufficiently strong to influence his perception of members of that group.

If the above generalization is valid, it may be attributable to the fact that an individual's stereotype which is shared by most members of his group is strengthened because it is frequently reinforced by them, while private stereotypes are generally not reinforced and consequently remain less strong. In situations which allow stereotypes to be elicited, perhaps only those stereotypes which are shared by members of the group are sufficiently strong to withstand the effects of contradictory perceptual cues, while private stereotypes may be disregarded in the light of some contradictory stimulus information which the subject views as further evidence of the possible inaccuracy of his stereotype.

In the literature it has been implicitly assumed that one's attitude toward an ethnic group reflects his attitude toward the individual members of that group. The results presented in Table 1 tend to support this assumption, although they cast some doubt on other assumptions concerning the nature of attitudes. It is clear that favorable attitudes toward Indians, evaluation of the concept "People from India," and the evaluation of two Indian individ-

uals, are all significantly and positively intercorrelated, suggesting that one's attitude toward Indians is consistent at both the group level and the individual level. The implication is that having ascertained an individual's attitude toward a particular ethnic group, one can make a fairly sound prediction concerning how he will evaluate particular members of that group in situations where he obtains some minimal information about them. The remaining correlations presented in Table 1 strongly suggest the need for further research before any assumptions concerning the nature of attitudes are accepted.

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VARIABILITY IN THE COMMUNICATION OF AFFECT*¹

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A. INTRODUCTION

Interest in nonverbal communication has led to studies indicating the reliability and correlates of judgments of affect through other than linguistic content. Knowler (7) and Kramer (8) have shown that judges as a group can correctly label emotions portrayed through the vocal aspects of content-standard speech. Levitt (9) has presented evidence that emotions portrayed through silent motion pictures of the face can be identified.

Though positive results were found in these and a number of other studies, in the sense that the judges as a whole could correctly identify the portrayed emotion, in no case has a researcher reported that his judges reached a unanimous conclusion on every one of their judgments. When judging human emotions or personality, with trained or untrained judges, there is always variability in judgment. This variability is most often studied as an attribute of the judge. Such a research strategy leads to comparisons between more or less accurate judges, or to studies examining correlates of rating behavior. Essentially, the analysis of ratings of human behavior, in which the raters' behavior is considered the variable under study, is an analysis of the perceiver in person perception. It is possible, however, to utilize the same data to analyze the behavior of the observed individual, the expressor. In regard to judge variability, it is possible to analyze disagreement between judges as a function of the judged person's behavior.

Disagreements in rating could be a function of a number of characteristics of the expressor. If judgments are made across several channels of communication (audio, video), then judged differences between channels are a reflection

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tion of inconsistency in the expressor's verbal and nonverbal emotional expression. If ratings within a single channel of communication show high judged variability, this is an indication of either rapid changes in emotion, or of unclear or conflicting cues on the part of the expressor.

In everyday life it is a common occurrence to interact with individuals who communicate one emotion with their tone of voice and another with the words they use or with facial expressions. As well, one is often unsure, in judging an individual's face or in reading a transcription of what he said, of the feelings he has had. Clinically, several therapists (1, 14) and diagnosticians (10, 12) have commented upon the usefulness of responding to cues from all possible behavior channels, and have provided some interpretations of inconsistency or inexplicitness.

Jourard (6) has suggested that verbal disclosure of personal beliefs is an important indicator of the general life style of an individual. He has differentiated the open, revealing, self-disclosing person from the closed, quiet, and hidden personality. The former person is more relaxed and generally is happier and more creative. Jourard deals with these phenomena almost entirely on the verbal plane; individuals are disclosing if they tell others important things. It would seem likely, however, that individuals who are verbally outgoing should complement verbal disclosure with parallel messages in other expressive modes. If the messages are parallel, verbally disclosing individuals will communicate similar emotions in the four modes studied in this paper. Those who are nondisclosing should try to hide the emotions they express with contradictory expression in different modes. Further, those individuals who are, according to Jourard's scale, more disclosing can be expected to be more extreme in their emotions. The same individuals who communicate stronger affect should be more verbally disclosing.

A study of the relationship between verbal disclosure and emotional consistency is important to theoretical questions in the general field of human communication; these relationships between verbal and nonverbal behavior are of current interest (3, 4, 13). Is there a nonlinguistic correlate of linguistic disclosure? What is the nonlinguistic behavior of the open, verbally disclosing individual?

The following hypotheses guided the present study:

1. Individuals show reliable differences in their consistency of affect (when consistency is defined as the elicitation of agreement from judges observing different channels of communication).
2. Individuals who are more consistent in communicating emotion are more self-disclosing.

3. Individuals who are more extreme in communicating their emotion are more self-disclosing.

B. METHOD

The judges, expressors, and judging methods have been detailed in a previous publication (13). Fifty-six male undergraduate expressors were judged for degree of pleasantness in each of 10 thirty-second periods in five-minute individual interviews. Judges rated the expressors on a nine-point self-anchored scale. Each judge worked as part of a team of six graduate and undergraduate judges, rating all of the 56 subjects. Judges rated either audio-video cues (words, voice, and face), video cues (face), audio cues (words and voice), or linguistic cues (transcribed words). Though each team of six judges rated each subject in only one channel, they switched between audio-video and video, or audio and transcript, in judging all 56 subjects. The interviewer was never on camera, and proved generally successful in using a switch to monitor his voice from the audio judges. Judges rated the 56 subjects taking part in what might have been the first five minutes of a relaxed counseling interview. The 56 subjects also completed a 25-item form of Jourard's self-disclosure inventory (6) between one week and one day previous to their interview.

Each of the 56 interviews took place on one of three consecutive days during a university semester. Judgments of audio-video and video took place on those three days; judgments of audio and transcript took place on three consecutive days approximately six weeks later, after transcripts had been prepared.

C. RESULTS

A matrix of 10 estimates of consistency for each of the 56 subjects was developed. An analysis of variance (see Table 1) showed that the judges reached greater agreement across the four channels from Day One to Day Three.

On Day One judges' ratings yielded an average variance for one subject in one time period of 1.96, on Day Two 1.59, and on Day Three 1.42. Since it was presumed that these changes were a function of growing familiarity

TABLE 1
ANALYSIS OF VARIANCE OF THE EFFECT OF DAYS ON CONSISTENCY

Source	df	Sum of square	Mean square	F
Days	2	273	136.5	8.1*
Residual	53	894	16.8	
Total	55			

* Significant at the .01 level.

of the judges with the judging task, for further analysis the expressors' scores were expressed as a deviation from the day's mean. This procedure partialled out variance due to changes in the judges' behavior.

A Kuder-Richardson 20 reliability was calculated for the variances expressed as deviations from the day's mean. This was done through the analysis of variance method, as suggested by Hoyt (5) and Cronbach (2). The resulting r is .74, with the F significant beyond the .01 level, confirming Hypothesis 1. Subjects do show reliable individual differences in their degree of emotional consistency in a short interview (see Table 2).

TABLE 2
ANALYSIS OF VARIANCE RELIABILITY OF THE SUM OF DEVIATION CONSISTENCY SCORES

Source	df	Sum of square	Mean square	F
Subjects	55	681355.50	12,388.28	3.8*
Times	9	925526.20	102,836.24	
Residual	495	1570912.20	3,173.56	
$r = 1 - 3173.56/12388.28 = .744$				

* Significant at the .01 level.

The statistical test of Hypothesis 2 required a correlation between self-disclosure scores and consistency. For the hypothesis to be accepted this correlation must be negative, indicating that high disclosers earn the low variances indicative of consistency. For this test a total variance score was calculated over the ten one-time estimates of consistency, and this score for each individual was correlated with self-disclosure. A probability value of less than five per cent would lead to acceptance of the hypothesis. Since there were significant differences in the average amount of variance elicited on each day, the relationship between variance and disclosure was tested with variance derived as a deviation from its day's mean. A negative correlation of .276 was obtained, which is significant beyond the .05 level. The hypothesis was confirmed.

Hypothesis 3 was tested by correlating the number of extreme scores (those seven or higher or three or lower) earned by an individual in his interview with the amount of disclosure he reported himself engaging in with companions on the Jourard scale. A Pearson product-moment correlation of $-.176$ was obtained, which is not significant at the .05 level. The hypothesis was not confirmed.

D. DISCUSSION

A major purpose of this research was to investigate variability in the expression of emotion. Conditions were established so that expressors' interview

behavior was observed separately by audio-video, video, audio, and transcript judges. It was shown that expressors differ in the degree to which they are consistent in their expression of pleasantness across the different modes. Expressors who were most consistent earned highest scores on the Jourard Self-Disclosure Scale.

The finding of reliability in expressor consistency suggests that, at least in a short period of time, variability in judges' ratings of emotion can be used as a reliable indicator of expressor behavior. Differences between ratings of one individual at one period of time on one construct can be easily dismissed, but the results of this study suggest that this variability is related to preinterview report of disclosure, and that it is reliable in a five-minute period.

The short-time period sampled and the relatively restricted environment in which subjects were observed are important limitations of this study. Subjects talked to only one individual in a relaxed, nonjudgmental atmosphere. The time periods themselves seemed reasonable for ratings; judges felt that this amount of time gave them an opportunity for judgments without overloading them with too much information for the relatively simple judgment required.

1. *Judge Behavior*

The incidental finding that judges as a whole tended to agree more as they had more practice is also worthy of comment. Though judges did not discuss the subjects or their judging task, they did talk about topics of interest to them. It was felt that judge efficiency would be more impaired than experimental control improved if judges were kept absolutely silent for a two- or four-hour judging period. The only controls were on the content of the talk, and the absolute prohibition of talking during judging periods. Under these conditions, judges in all channels came to greater agreement with more practice. It is, however, necessary to investigate the possibility of a statistical artifact. If judges were responding to their increasingly common background, leading to a similar way of perceiving and rating the emotional cues, it would be expected that there would be no difference in other characteristics of the scores besides growing agreement around some point in each time period.

On the other hand, greater agreement could take place as a result of a reduction in the number of extreme scores given, since variance is in part a function of them. With other things held constant, a set of scores with more extreme ratings will have a higher variance than a set of scores in which very few scores are extreme. If judges on the final two days awarded fewer extreme scores—1, 2, 3, 7, 8, 9—this would be very likely to lead to statistically

evident greater agreement. Two statistical tests were calculated to evaluate the "no-extreme" hypothesis. A Pearson product-moment correlation between expressors' consistency and extreme scores yielded an $r = .71$ ($p < .01$) suggesting that, in fact, subjects in this experiment did earn lower variances when they were rated with fewer extreme scores. In addition, a one-way analysis of variance of extreme scores, treating the three days as the treatment, yielded an $F = 9.1$ ($p < .01$) (see Table 3).

TABLE 3
ANALYSIS OF VARIANCE OF EXTREME SCORES BY DAYS

Source	<i>df</i>	Sum of square	Mean square	<i>F</i>
Days	2	8,427	4,213	9.91*
Residual	53	22,535	425	
Total	55	30,962		

* Significant at the .01 level.

On Day One the average subject was rated with about 90 extreme scores out of 240, on Day Two 66, and on Day Three 62. Judges tended to stay in the middle of the scale on the final two days. It is difficult to be certain what the reduction in extreme scores from Day One to Day Three means. Presumably it is not attributable to expressors, and so must be attributed either to a change in the rating behavior of judges or to a different style of interviewing by the interviewer. In either case, it would appear most risky to explain this purely as growing agreement among judges.

2. *Personality Variables*

Why is disclosure related to consistency in emotional expression and why is it not related to extremity in emotional expression? First, an examination of the statistical realities of the study show that it would be very difficult for both Hypotheses 2 and 3 to be accepted. As noted previously, consistency (low variance) and extremeness of emotionality were negatively related; Hypotheses 2 and 3, however, stated that they both would be positively related to a third variable: self-disclosure.

The results of this study suggest that individuals who are more open linguistically are more consistent in their emotional expression of their whole self. The concepts of disclosure and consistency have interesting parallels to Rogers' (11) concepts of congruence, and Truax and Carkhuff's (15) genuineness. Truax and Carkhuff (15, p. 69) suggest that the genuine therapist is "sincere rather than phony," and must "express his real feelings or being rather than defensiveness." It can be expected that the individual who is real,

not defensive, and sincere would be perceived similarly by those judging his words, his facial expression, or his vocal qualities. The present study relates this rather rigid measuring technique for genuineness to a theoretically related concept: disclosure. Apparently the individual who is most open with his relatives and close friends is most emotionally consistent in interviews. It has been suggested that genuineness in the psychotherapy interview is a function of both self-disclosure of personally meaningful material and the full expression of that material; and that at least a part of that relationship also takes place outside of interview behavior, for nontherapists, as well as therapists.

E. SUMMARY

Judges' ratings of expressors' affect never reach unanimous agreement. Clinical observation suggested that variability in expression within and between verbal, facial, and linguistic cues are in part responsible for judges' lack of agreement. To test the reliability and interrelationships of emotion-expression variability, 56 expressors were observed in 10 thirty-second periods by groups of six audio, video, audio-video, and transcript judges. Inter-channel variability in expressors' emotion expression was a reliable score in a five-minute period, and was positively related to self-disclosing behavior reported to take place beyond the interview. Judges reached greater apparent agreement with more practice, though this was related to the less frequent use of extreme scores.

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INVOLVEMENT AND GROUP EFFECTS ON OPINION CHANGE* 1

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A. INTRODUCTION

An individual holding an opinion that differs from the apparent consensus of a collection of individuals is subjected to a variety of internal and external pressures to alter his opinion so that it may become congruent with the others. When an individual is confronted with a discussion of an issue by a number of people, his response often depends on his perception of the group as a whole. Especially in situations where only information about the others' opinions is available, the individual is impelled to give each person's response equal consideration, and also to treat the collection of opinions as a total configuration. Each individual perceives a group opinion, which is a complex stimulus represented by a distribution of values on some opinion dimension, with each value representing an individual opinion. At least two discriminable stimulus characteristics of such a distribution are the dispersion of opinions and the distance between the individual's own opinion and the mean value of the groups' opinion.

In initial attempts to determine the effects of these two parameters of the group on opinion change, Rule (9) and Rule and Renner (10) demonstrated that both group dispersion and distance between the individual and group opinions independently affected judgmental and opinion change. Individuals who differed from a group sharing close agreement on an issue changed opinions more often than individuals who differed from a group sharing less close agreement on the issue. Furthermore, individuals farther away from the mean of the group opinions changed opinions more often than those closer to the group mean. Since the effectiveness of these two parameters has been established, the conditions under which they maximally induce conformity should be considered next. In the present study, theoretical consideration led to the examination of these two stimulus elements in conjunction with the individ-

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ual's involvement in issues. Involvement was expected to interact with distance and dispersion to produce differential effects on change in opinion.

The rationale for this expectation stems from a review of the inconsistent findings of studies investigating the relationships between the distance variable and conformity. Some reports (2, 4, 5, 6) indicated that greater shifts in judgments occurred, as a function of increasing distance between an individual and group opinion, when the judgments concerned neutral issues or stimuli than when the judgments concerned controversial stimuli. However, other results (7, 12) indicated that when opinions concerned pro-con issues, such as political opinions, greater conformity occurred as distance decreased. Sherif and Hovland (11) have suggested that these differences in findings may have been due to the degree of involvement in the judgments or issues. In the present investigation of this notion, it was expected that the manipulation of involvement would yield monotonic relationships of differing slopes between opinion change and distance.²

Involvement is here defined as the degree of extremity of agreement in various issues. This definition not only approximates the definition used in the studies of distance from which the present hypotheses were developed, but it is also of particular interest in the area of attitude measurement and attitude change.

Although distance studies have not typically dealt with the dispersion variable, the present study investigated the relationship between dispersion and conformity. It was expected that involvement would produce moderating effects on group dispersion and conformity, as well as on distance and conformity.

B. METHOD

1. *Subjects*

The subjects were 120 male students selected from introductory psychology classes. Subjects participated to meet course requirements.

2. *Materials*

A 24-item questionnaire comprised of statements concerning art, music, political, fashion, and career issues was used. Subjects indicated the degree to which they agreed with each statement on a scale varying from zero to 100 (zero indicated complete agreement; 100 indicated complete disagreement).

² A study by Freedman (3), dealing with these variables was reported while this study was in progress. His findings are reviewed in the discussion section of this paper.

This scale allowed a wide distribution on which to base the experimental conditions of social influence. Subjects also indicated the degree to which they felt their opinion would not change within a one-year period.

Five sets of 24 cards were prepared in advance of the experimental situation. Each card contained one stimulus item.

Slips of paper with *S*'s identification number and opinion served as fictitious judgments designed to induce conformity. These were written prior to the experiment by four different people and were arranged out of *S*'s sight.

3. Procedure

There were two sessions of the experiment separated by approximately three weeks. The first entailed securing each of 850 *S*'s judgments on the 24-item scale. This scale was included in a battery of personality and opinion tests administered to the psychology class. Sixty *S*s designated as involved in the issues were selected by choosing 12 items on which agreement varied from zero to 25 or from 75 to 100; *S*s designated as noninvolved in the issues were selected by choosing 12 items on which agreement varied from 26 to 74. As a check on involvement for these *S*s, confidence in attitude was related to extremity of opinion. Items receiving extreme scores received high confidence of no change scores; items receiving neutral scores received low confidence of no change scores.

One hundred twenty *S*s returned for the second session. The particular items used for each of these *S*s depended on opinion score rather than content of the item; hence the 12 experimental items varied for each *S*.

In the second session, *S*s were run in 24 groups of five each. Subjects were seated in cubicles which restricted the range of observations. The alleged purpose of the study was to establish norms on the attitude items under controlled laboratory conditions. These conditions were met by restricting visual and auditory stimulation in the cubicles.

Subjects were instructed that one *S* would be randomly selected to serve as a secretary for the group to facilitate the experimental procedure. When the general instructions were distributed, each *S* also received secretary instructions. This provided a rationale for seeing other *S*'s opinions on each item.

Experimenter distributed each of 12 items individually and asked *S* to state his opinion. Each *S* was led to believe that he was judging the statement just previously judged by others in the room and, as secretary, was given the others' opinions to record. Subjects first received and recorded the fictitious opinions and then recorded his own opinion of the statement.

The fictitious opinions were fixed on the basis of a 3×4 factorial design

with three levels of distance between *S*'s initial opinion and the mean of the fictitious opinions and four levels of group dispersion of opinions. The three distances were 12, 18, and 24 units from *S*'s initial opinion and the four dispersions were $2\sqrt{2}$, $3\sqrt{2}$, $4\sqrt{2}$, $5\sqrt{2}$ (in deviation units). These judgments were randomly assigned above and below *S*'s initial opinions, where possible, over treatment conditions to balance any directional response or regression effects in conformity behavior.

C. RESULTS

Data were scored to reflect conformity to group judgments. Amount of individual change was measured by the differences between pre- and postinfluence judgments for each item. Change in the direction of group judgments was assigned a plus sign; change in the direction opposite the group judgments was assigned a negative sign.

Data were analyzed by two 12×12 Latin square analyses of variance, each replicated five times (1), with involvement assigned to each square. Treatments comprised a 3×4 factorial arrangement with three distances and four group variances. Five *S*s were assigned to each order of presentation within each square so that *S*s were nested in involvement conditions and crossed with distance and dispersion variables. Analysis of variance summary table is presented in Table 1.

Differences in conformity were significant as a function of discrepancy between *S*'s opinion and the group's opinion ($F = 8.76$, df 2 & 1376, $p < .005$). Trend analysis indicated a significant linear component for distance ($F = 17.23$, df 1 & 1376, $p < .005$). Mean change for the 12, 18, and 24 units of distance conditions was 12.26, 14.33, and 17.14, respectively.

There were significant differences in conformity as group agreement decreased ($F = 3.28$, df 3 & 1376, $p < .025$). Trend analysis indicated a significant linear component for group dispersion ($F = 7.43$, df 1 & 1376, $p < .025$). Mean change for the $2\sqrt{2}$, $3\sqrt{2}$, $4\sqrt{2}$, $5\sqrt{2}$ dispersion conditions was 12.04, 15.17, 14.75, and 16.08, respectively.

The involvement, distance, and group dispersion variables significantly interacted ($F = 2.17$, df 6 & 1376, $p < .05$). Table 2 indicates mean change for these variables. Figure 1, illustrating this interaction, shows that on both involving and noninvolving issues conformity increased as variance and distance increased. However, at the level where group opinions were most dispersed, conformity decreased with increasing distance on involving issues, and increased with increasing distance on noninvolving issues. Trend analysis indicated a significant three-factor interaction between task, the linear compo-

TABLE 1
ANALYSIS OF VARIANCE SUMMARY

Source	df	MS	F	p
Involvement	1	24,519.00	35.68	< .005
Order	11	309.10		
Task \times Order	11	918.75	1.33	
Error (a)	96	687.11		
Residual \times Task	110	404.00		
Subjects	119	873.85	2.63	
Period	11	404.58	1.22	
Involvement \times Period	11	550.32	1.65	
Variance	3	1,091.14	3.28	< .025
Linear component	1	2,473.38	7.43	< .025
Deviation from linearity	2	400.02	1.20	
Distance	2	2,916.02	8.76	< .005
Linear component	1	5,733.03	17.23	< .005
Deviation from linearity	1	99.02		
Distance \times Variance	6	366.13	1.10	
Involvement \times Variance	3	241.88		
Involvement \times Distance	2	544.30	1.64	
Involvement \times Variance \times Distance	6	721.09	2.17	< .05
Involvement \times Variance linear \times				
Distance linear component	1	1,705.63	5.13	< .025
Deviation from linearity	5	524.18	1.51	
Error (b)	1,376	332.72		

ment of distance and the linear component of dispersion ($F = 5.13$, df 1 & 1376, $p < .025$). The linear component of dispersion decreased linearly over distance on involving issues and, to the degree that it is linear, the linear component of dispersion increased linearly over distance on noninvolving issues. Figure 2 describes the linear relationships. The group dispersion slope values for the 12, 18, and 24 units of distance conditions on involving issues were 2.12, 1.54, and .09, respectively, and on noninvolving issues, were 1.41, -1.08, and 2.91, respectively.

Opinion change was greater on involving issues than on noninvolving issues ($F = 35.68$, df 1 & 1376, $p < .005$). Although provocative, this finding could be due to Ss with initially extreme opinions having more opportunity to shift

TABLE 2
MEAN CHANGE FOR INVOLVEMENT, DISTANCE, AND GROUP DISPERSION

Distance	Involving issues Group dispersion				Noninvolving issues Group dispersion			
	$2\sqrt{2}$	$3\sqrt{2}$	$4\sqrt{2}$	$5\sqrt{2}$	$2\sqrt{2}$	$3\sqrt{2}$	$4\sqrt{2}$	$5\sqrt{2}$
Near (12)	14.40	16.73	16.98	21.38	2.08	10.86	7.78	7.83
Moderate (18)	17.63	17.43	14.98	23.58	10.73	11.10	10.30	7.40
Far (24)	18.26	21.35	22.86	18.10	9.13	13.58	15.63	18.23

than Ss with initially neutral positions. No inferences were drawn from this main effect because of this possibility.

No other effects or interactions were significant.

D. DISCUSSION

The results of the present study clearly indicate that the group did function as a perceptual object for its individual members. Independently of any direct

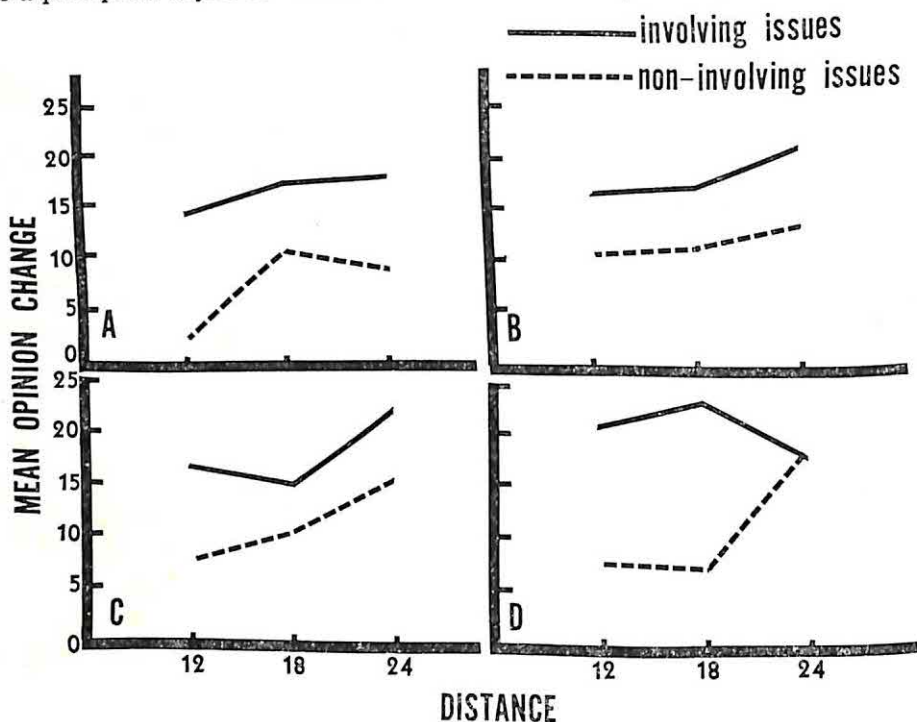


FIGURE 1
MEAN OPINION CHANGE AS A FUNCTION OF DISTANCE FOR INVOLVING
AND NONINVOLVING ISSUES AT EACH LEVEL OF GROUP DISPERSION

A represents the first level of dispersion, $2\sqrt{2}$; B, the second level of dispersion, $3\sqrt{2}$; C, the third level of dispersion, $4\sqrt{2}$; D, the fourth level of dispersion, $5\sqrt{2}$.

pressures exerted on individuals by other group members, the distribution of the group opinions affected differential behavior. The motivational source of such pressures to change in the type of situation studied here appears to be informational, with the direction of change determined in large by both distance and dispersion of group members' responses, in conjunction with the person's involvement in the issues. Although each of these variables has been investigated previously, this study provides an analysis of the complex stim-

ulus configuration into two of its components and highlights the necessity of dealing with the interactive effects of the many variables in the conformity situation.

The involvement, group dispersion, and distance interaction revealed the following relationship: Change in opinion was greater as a function of increasing distance at the more homogeneous levels of group dispersion on both involving and noninvolving issues. However, when the group opinions were

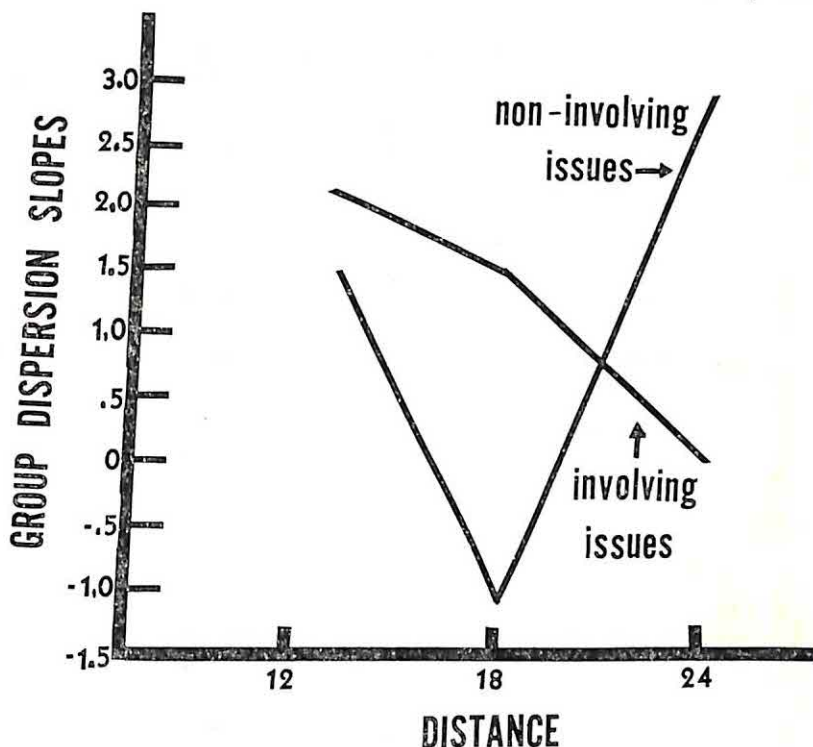


FIGURE 2
THE SLOPE OF GROUP DISPERSION AS A FUNCTION OF
DISTANCE FOR INVOLVING AND NONINVOLVING ISSUES

very divergent, the tendency for opinion change to be greater over distance reversed on involving issues. When *Ss* were involved in an issue and when group opinions were dispersed, change decreased as distance increased; when *Ss* were not involved in an issue and when group opinions were dispersed, opinion change increased as distance increased. This finding is supported by trend analysis showing that group dispersion exerted its greatest effect on opinion shift at near distances for involving issues and at far distances for

noninvolving issues. Thus, the expected interaction between distance and involvement was enhanced by group dispersion.

It is important to note that on involving issues at the greater dispersion level, maximum change occurred at the moderate level of distance. This is in substantial agreement with Freedman's findings in a study where distance and involvement were systematically studied (3). The present study defined involvement as extremity of agreement with a position on an issue, whereas Freedman manipulated involvement by instructions which emphasized evaluation of performance in a concept formation task. Sherif and Hovland (11) had suggested that these two types of involvement may yield different behavioral effects. Comparison of the present study and Freedman's study does not indicate that this is the case. Basically the same relationship held, regardless of the operational definition employed in each study.

Since relatively little systematic attention has been devoted to the group dispersion variable as a determinant of change, the data are especially interesting in this study. Greater shift in opinion as a function of increased group dispersion is contrary to previous findings (9, 10). One possible interpretation of the present finding is in terms of a preference for stimulus complexity under certain conditions and for stimulus simplicity under other conditions. Levy (8) reported that group variance was related to attractiveness and that significant preference for dispersion emerged for groups which were positively valued. Applying his results to the present series of studies on group dispersion leads to the following reasoning. On issues which elicit opinions generally validated only by social groups, information about other people's attitudes is relevant and, hence, favorably evaluated. Under these conditions, individuals are attracted to groups characterized by greater stimulus variance on the opinion dimension. Such attraction enhances conformity to the group opinions. That this effect can be moderated by involvement and distance is evident from the data here reported. This rationale would account for the findings in this study, where opinions on issues were those generally validated by social groups.

On issues of a more factual nature or on judgments which can be more readily validated by empirical means, information about others' opinions is less important and, hence, less favorably evaluated. In this case, the conditions for homogeneity preference or less group variance are present. Homogeneity then would serve as the major source of social influence. Rule's previous findings indicated that less stimulus variance induced greatest conformity. In these studies, judgments were those in which actual outcome of the judgment could be validated empirically.

E. SUMMARY

The primary purpose of this research was to determine which specific aspects of the total group configuration influence a deviant group member to change his opinion. In the absence of external pressures to change, informational pressures were expected to heighten the deviant person's response to the group as a perceptual object comprised of at least two elements, dispersion and distance of opinions. Of particular concern in the study was the extent to which the two parameters interacted with involvement in issues to produce change in opinion. It was anticipated that individuals' opinions are influenced by both the distance of the mean of the other group members' judgments from one's own judgments and the degree to which the other members agree, and that the relative influence of these variables on opinion change is moderated by involvement in issues.

A secondary concern was to investigate further the reasons for inconsistent results from various opinion change and distance studies. It was predicted that on involving issues, greater distance decreases opinion change, whereas on noninvolving issues, greater distance increases opinion change.

In order to investigate these problems, opinions on various issues were obtained. The consequences of knowing four other individuals' opinions were assessed. Group opinions were fictitious and varied in terms of distance from each member's opinion and in terms of dispersion among the four opinions.

The major result was that group dispersion exerted a significant moderating effect on the relationship between distance and involvement. Greater opinion shifts in the direction advocated by the more homogeneous groups occurred as distance increased between *S*'s opinion and the group norm on both involving and noninvolving issues. However, group dispersion enhanced a positive relationship between opinion change and distance under noninvolving conditions, and a negative relationship between opinion change and distance under involving conditions.

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BIRTH ORDER AND INTELLIGENCE*¹

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A. INTRODUCTION

There has been a recent resurgence of interest in research on ordinal position as a result of studies indicating that firstborn are more likely to be high achievers than are those of later ordinal positions (4, 5, 7, 13). The mediating variable in this relationship is often assumed to be intelligence. However, existing birth order-intelligence studies have yielded conflicting findings. Some studies have indicated a superiority in intelligence of later born over firstborn, while other studies have suggested that firstborn are superior in intelligence to those of later ordinal positions.

The former group of studies support the findings of an early classic report by Thurstone and Jenkins (18). These investigators studied actual siblings in 382 families from records at the Institute for Juvenile Research in Chicago, but the children studied were primarily "problem" children with case histories of asocial and antisocial behavior. While it was held by the investigators that the interrelationships of characteristics of this sample would present no unique differences from similar relationships in the general population, the children were well below average intelligence, with a mean *IQ* of 80. The findings of Thurstone and Jenkins led Berelson and Steiner to include in a recent compendium of more than 1000 "important and verified generalizations" in the social sciences that "within families, there is a consistent increase in average intelligence from first-born to last-born" (6).

Several more recent investigations have supported the findings of Thurstone and Jenkins. Cohen (8) reports results from a small sample of children, in which the Stanford Revised Intelligence Test scores of firstborn and second

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born are compared with children of other ordinal positions. It was found that 60 per cent of the second born had the highest *IQ*s among all siblings, while only 22 per cent of the firstborn obtained the highest *IQ* scores. Firstborn and second born first graders were compared by Koch (11) on the basis of scores obtained on the SRA Primary Mental Abilities Test. A sample of 360 children from several public schools and one private school was divided into 24 subgroups, according to ordinal position, sibling spacing, and sex. These 24 subgroups were then matched individual for individual, on the bases of age and parents' socioeconomic status (SES), in order to compare firstborn with second born. Ordinal position was found to be related significantly to total performance on the Primary Mental Abilities Test, with the second born showing superior performance to firstborn.

Birth-order data for a larger sample were analyzed by Altus (1) in a study of 13,000 World War II Army illiterates. On the basis of Wechsler *IQ* scores, it was concluded that *IQ* favors the youngest. In more recent investigations of high achievement groups, however, Altus (2, 3) notes that firstborn generally emerge as performing better than later born on ability measures. Using scores obtained on the Scholastic Aptitude Test (SAT) as a measure of academic aptitude, he examined the ordinal position of all the entering freshmen at the University of California at Santa Barbara in 1960 and 1961. Firstborn freshmen were reported to have a mean score on the verbal section of the SAT higher than that of later born freshmen. Firstborn female freshmen were found to have a mean score on the mathematical section of the SAT higher than that of their later born peers, while scores on the mathematical section fail to differentiate between the two groups of male freshmen.

In addition to these findings of Altus, a number of earlier studies had also produced data in contrast to those cited above, thus stimulating a need for renewed attention to the relationship of *IQ* to ordinal position. In an investigation conducted during the early 1920's, Terman (17) reported an overrepresentation of firstborn among 574 gifted elementary school children. The sample included students from the eight primary school grades with above-average *IQ*s as measured by the Binet examination. Among two-, three-, and four-child families, Terman reported 56.1 per cent, 36.9 per cent, and 33.0 per cent, respectively, of firstborn in this above-average group. Schachter (15) found 50.2 per cent firstborn among all undergraduates enrolled in introductory psychology courses at the University of Minnesota in 1959 and 1961. Among all resident graduate students registered at the Department of Psychology at the University of Minnesota in 1961, there were 57.8 per cent firstborn. It is reasonable to assume a higher mean *IQ* for graduate students than for undergraduates and thus the results are suggestive of an increase in

proportion of firstborn corresponding to an increase in mean *IQ* of the sample. On the basis of the first group of studies cited earlier, we would expect the opposite of these findings: namely, an underrepresentation of firstborn in high intelligence and thus high achievement groups.

Berelson and Steiner (6) suggest an explanation of the discrepancy between the findings of the two groups of studies discussed above in terms of socioeconomic status. According to the authors, the finding of increasing *IQ* with birth order holds within families (i.e., actual siblings), while across the entire population (i.e., a cross-sectional design which does not employ actual siblings) there is an overrepresentation of firstborn among high *IQ* groups because of the overrepresentation of small sibships among parents with high *IQ*s. This interpretation is challenged, however, by the fact that all of the studies herein reviewed which have shown a lower *IQ* for the later born have controlled for family size. Moreover, the interpretation of Berelson and Steiner appears less convincing in the light of a third body of studies which indicates no relationship between intelligence and ordinal position (12).

An alternative explanation of the discordant findings in studies of *IQ* and aptitude correlates of birth order rests upon the biases of the groups studied. Of the investigations thus far undertaken, a great majority have involved analyses of institutionalized samples, with characteristics far from representative of the total population. Of the seven studies discussed above, two dealt with samples of subjects with measured subnormal *IQ*s, and three studies considered only subjects with above-average aptitude. A second deficiency of a number of studies is found in the small sample size. An *N* of 100 or 200 is hardly adequate if ordinal position is to be examined separately for each combination of sex and family size. It appears clear that analysis of a large sample with a representative *IQ* distribution is now needed in order to determine if there is any predictable relationship between intelligence and ordinal position. The present study breaks down data derived from a national sample of high school seniors. Mean intelligence scores are analyzed by sex and within each family SES and each family size.

B. DATA

Approximately 88,000 high school seniors from 1225 secondary schools received a battery of tests administered in the spring of 1960 by Project TALENT. Respondents to a follow-up mail questionnaire, sent 12-18 months after the original testing, yielded about 50,000 usable returns collated with the original data. Of this number, there are 43,352 cases constituting the sample used herein, for which data were available on all of the five basic variables: sex, birth order, family size, SES, and intelligence. These cases were

then weighted to correct for variation in sampling ratios of various combinations of school type, size, and geographic location. In addition, weights were applied to approximate the distributions of the population in this age group, thus yielding a total weighted sample of 1,298,000 cases distributed among family sizes as shown in Table 1 (10).

TABLE 1
DISTRIBUTION OF FAMILY SIZES OF 1960 HIGH SCHOOL SENIORS

Size of family	Percentage of total weighted sample
One	8.7 per cent
Two	24.2
Three	23.0
Four	16.4
Five	10.6
Six	6.2
Seven or more	10.9
All family sizes	100.0 per cent

The Project TALENT intelligence measure is a composite score derived from three groups of tests assessing reading comprehension, abstract reasoning, and mathematical aptitude, weighted 51 per cent, 25 per cent, and 24 per cent, respectively (10, pp. B-8). Reading comprehension is measured by two domain tests, one in the domain of fiction (novels) and the other in non-fiction (magazines), each test consisting of 100 multiple-choice questions based on 20 passages (10, pp. 3-117, 118). The test designed to measure abstract reasoning ability consists of nonverbal problems concerned with relationships among diagrams (10, pp. 2-86). The third component of the intelligence measure is an arithmetic reasoning test composed of 16 items requiring that the student know how to solve elementary problems, but not requiring him actually to perform any computations (10, pp. 2-123). The intelligence measure is standardized with a mean of 50 and a standard deviation of 10.

The socioeconomic index is a weighted measure based on student responses to nine items: value of home, family income, father's occupation, father's education, mother's education, own room for student, and number of books, appliances, and televisions in home (9, pp. E-11).

C. RESULTS AND DISCUSSION

Table 2 presents mean intelligence scores by sex, SES, and by birth order in two-, three-, four-, and five-child families.² To determine if there is a pro-

² As a result of the small unweighted *N* in each ordinal position, sex, and SES category for six-child and larger families, these cases are omitted from the analysis.

TABLE 2
MEAN INTELLIGENCE SCORES, BY SEX, SES, AND BIRTH ORDER IN TWO-, THREE-, FOUR-, AND FIVE-CHILD FAMILIES

Sex and SES	Two-child family			Three-child family			Four-child family			Five-child family		
	First-born	Last born		First-born	Int. born	Last born	First-born	Int. born	Last born	First-born	Int. born	Last born
Male												
Low SES	44.3	44.6		42.8	46.3	44.8	46.2	44.0	45.0	47.0	41.4	37.7
Lower middle SES	49.8	46.4		50.1	48.8	48.3	48.0	48.7	48.5	49.4	47.2	44.6
Upper middle SES	52.5	51.5		51.9	51.7	52.3	52.2	50.7	46.1	49.4	51.8	51.7
High SES	54.0	52.5		53.5	52.6	54.5	55.4	52.4	49.7	51.6	53.7	54.2
Female												
Low SES	44.6	44.6		44.9	45.0	44.4	43.5	42.7	44.2	40.8	42.2	42.6
Lower middle SES	49.6	48.4		48.0	47.0	46.2	46.6	46.1	45.3	45.3	45.3	44.6
Upper middle SES	51.3	49.8		50.8	49.3	48.1	50.5	49.0	49.9	48.6	49.2	42.4
High SES	53.4	52.9		53.1	51.0	53.0	53.2	51.3	50.6	55.0	52.7	45.4

gression of intelligence scores with ordinal position, the intermediate children in three-, four-, and five-child families can be examined in relationship to their siblings. To facilitate discussion, each of the 24 family-size/SES groups will be referred to as a single case.

Among the 24 cases, 13 of the intermediates have intelligence scores between their older and younger siblings, with 11 of these 13 cases being in the order of a decreasing progression in intelligence. Among the remaining 11 cases,

TABLE 3
DIFFERENCES IN MEAN INTELLIGENCE SCORES BETWEEN FIRSTBORN AND LAST BORN,
BY SEX AND SES, IN TWO-, THREE-, FOUR-, AND FIVE-CHILD FAMILIES

Sex and SES	Two-child family	Three-child family	Four-child family	Five-child family
Male				
Low SES	-0.3	-2.0**	1.2	9.3**
Lower middle SES	3.4**	1.8*	-0.5	4.8**
Upper middle SES	1.0*	-0.4	6.1**	-2.3
High SES	1.5**	-1.0	5.7**	-2.6*
Female				
Low SES	0.1	0.5	-0.7	-1.8
Lower middle SES	1.2**	1.8**	1.3	0.7
Upper middle SES	1.5**	2.7**	0.6	6.2**
High SES	0.5	0.1	2.6*	9.6**

Note: Negative numbers indicate a higher mean intelligence score for last born than for firstborn.

* .05 level of significance, Z-tests for difference between means.

** .01 level of significance, Z-tests for difference between means.

where there is no consistent progression of intelligence scores by birth order, five of the intermediates have scores higher than both their older and younger siblings, and six have scores lower than both. Thus a decreasing progression of intelligence with birth order is seen to be the predominant pattern among three-, four-, and five-child families within each socioeconomic group. However, this pattern appears in less than one-half (11/24) of the cases. In the majority of the two-child family groupings, the aggregate of the last born also emerges with a lower mean intelligence score than does the firstborn aggregate. Among socioeconomic categories and among family size groupings, no consistent differences in intelligence scores by birth order are apparent.

To determine if there are significant differences in mean intelligence scores when only the two extreme ordinal positions are examined, differences in the mean scores of firstborn and last born, by family size and SES, are given in Table 3. Among the firstborn to last born combinations presented in the table, 23 of the 32 conditions show a higher mean intelligence score for firstborn than for last born. The differences in 12 of these 23 situations are statistically sig-

nificant at the .01 level and the differences in an additional three cases are significant at the .05 level. However, it should be noted that there are nine combinations in which the last born demonstrate superior ability to those who are firstborn. The difference in one of these nine cases is statistically significant at the .01 level and the difference in one additional case is significant at the .05 level.

The findings reported herein for two-, three-, four-, and five-child families point toward a slight superiority in intelligence of firstborn over last born, with a tendency for intermediate born to have intelligence scores between their older and younger siblings. However, while these differences between firstborn and last born are statistically significant in a majority of the cases, the mean difference in the standardized intelligence scores between firstborn and last born is 1.64, comparable to 3.28 *IQ* points. Such a small difference is unlikely to have any practical effects on the achievement of firstborn relative to that of last born.

Differences in intelligence do not appear significantly large enough to account for the observed large differences in achievement among the ordinal positions reported in numerous studies, and economic hypotheses likewise fail to explain the differential achievement by birth order (4); further research on birth order, therefore, may be more fruitful if focused on some of the social-psychological variables reported to be associated with ordinal rank (14, 16). To date, few studies of social-psychological correlates of ordinal position have been directed to explaining differential achievement levels, and those that have done so have usually utilized small, nonrepresentative samples, generating few generalizations and holding little predictive value. It is suggested that analysis of a large sample, similar to the Project TALENT sample utilized in this present study, with a representative distribution of personal and environmental characteristics, is now needed to ascertain what, if any, social-psychological variables are clearly and consistently associated with the different ordinal positions, and how these variables affect academic achievement and occupational success.

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SEX, BRAIN DAMAGE, AND RACE EFFECTS
IN THE PROGRESSIVE MATRICES WITH
RETARDED POPULATIONS* 1

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HARRY E. ANDERSON, JR., FRANK E. KERN, AND CHARLOTTE COOK

A. INTRODUCTION

The measurement of abilities among mentally or educationally retarded groups has become increasingly important in recent years. The Raven (3) Coloured Progressive Matrices (CPM) appears to be a useful instrument for measuring spatial reasoning ability with retarded groups, especially the Sets A, A_B, and B. Jensen (2), however, emphasizes a statistically significant racial (viz., Negro-white) difference in CPM scores. Sperrazzo and Wilkins (4) also found racial differences for middle and upper socioeconomic groups, but no racial differences for the lower socioeconomic groups. The CPM has also been found to be sensitive to brain damage even beyond differences in Wechsler Adult Intelligence Scale (WAIS) scores (5).

There are no studies that present CPM score differences for racial or brain-damaged groups, specifically, in the educationally or mentally retarded population. The present study focuses on such groups.

B. METHOD

1. *Subjects*

The subjects were 147 students at the Georgia Rehabilitation Center (GRC). The students are admitted to GRC for evaluation and training upon recommendations of a vocational rehabilitation (VR) counselor and an internal screening committee. Their age range is from 16 to 65. There are no particular restrictions on type of disability (viz., mental, physical, or emotional) for admittance to GRC; the GRC Admissions Office, however, classifies the student as brain damaged on the basis of a physician's examination. The subjective opinion of GRC professional personnel is that 90 per cent of their students come from the lower socioeconomic level. The

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¹ The authors are indebted to personnel at the Georgia Rehabilitation Center for their assistance in the collection of data.

average *IQ*, from unpublished analysis, is about 85. The subjects of this study include all students to whom the Raven CPM was administered between June, 1964, and June, 1966.

2. Instruments

The students are subjected to extensive testing and examination during their first week at GRC. As a part of the program, they are administered the WAIS by a VR-approved psychologist and other tests by GRC counselors and evaluators. The instruments selected for the present study include the WAIS Verbal (WAIS-V) and Performance (WAIS-P) tests, the Sets A, A_B, and B of the CPM, together with the total score (CPM-Tot), and the Word Recognition (WR) and Arithmetic (Arith) tests of the Wide Range Achievement Tests (WRAT).

C. RESULTS²

The breakdown of the sample with respect to race, sex, and brain damage can be seen in Table 1, together with the group means for the eight variables included in analyses. Group mean values are also given there for the WAIS Full Scale (FS), age, and highest grade level attained in school.

The eight test variables were each analyzed by the least-squares analysis of variance (1) specifying sex, race, and brain damage as fixed effects in the model. First- and second-order interactions were also tested so that each *F* value could be evaluated with one and 139 degrees of freedom.

None of the tests of significance was significant at the .05 level for CPM-A, CPM-B, and WRAT-AR. The following tests were significant at the .05 level: race in WAIS-V ($F = 4.585$); brain damage in WAIS-P ($F = 5.184$) and CPM-Tot ($F = 4.854$); brain damage by race interaction in WRAT-WR ($F = 4.447$) and CPM-A_B ($F = 4.084$). Only one *F* value was significant beyond the .01 level, that for CPM-A_B in the test for brain-damage effects ($F = 8.115$).

Brain-damaged and non-brain-damaged differences in the CPM might be due to observed differences various in the WAIS and WRAT. A least-squares analysis of covariance, therefore, was conducted with the CPM variables, with the partialling out of effects due to WAIS-V, WAIS-P, WRAT-WR, and WRAT-Arith. If one considers the same sources of variation as before, together with interactions, and with the use of one and 135 degrees of free-

² The analyses of data were made possible through personnel and facilities of the Computer Center, University of Georgia.

TABLE 1
GROUP MEANS ON VARIABLES IN THE COLOURED PROGRESSIVE MATRICES (CPM), THE WIDE RANGE ACHIEVEMENT TEST (WRAT), AND THE WECHSLER ADULT INTELLIGENCE SCALE (WAIS), TOGETHER WITH AVERAGE AGE AND SCHOOL GRADE LEVEL OF ATTAINMENT

Group	N	A	CPM			WRAT			WAIS			Age*	Grade level*
			A _B	B	Tot	WR	Arith	V	P	FS*			
Brain damage	60	10.62	9.97	7.62	28.17	7.45	5.90	91.42	88.20	89.53	27.00	27.00	8.95
White male	23	9.78	9.04	6.09	24.91	7.09	5.56	88.04	83.22	85.22	27.30	27.30	9.43
White female	7	10.29	10.57	7.71	28.57	5.54	5.70	88.29	86.29	86.43	24.86	24.86	11.14
Negro male	4	9.00	7.25	6.25	22.5	4.30	3.90	79.00	71.50	74.25	28.00	28.00	7.25
Negro female													
Brain damage	33	9.09	8.57	6.55	24.21	6.47	6.06	84.67	79.18	81.15	26.03	26.03	9.24
White male	11	8.91	8.36	6.36	23.64	8.17	5.41	85.00	79.09	81.27	25.36	25.36	8.18
White female	7	10.57	9.86	7.14	27.57	8.10	4.54	79.00	78.57	77.57	25.43	25.43	10.71
Negro male	2	9.50	6.50	7.50	23.50	4.20	4.15	71.50	63.50	66.00	28.00	28.00	7.00
Negro female													

* For information only; not used in analyses.

dom, only the test of significance for brain damaged in the CPM-A_B ($F = 4.832$) proved significant even beyond the .05 level.

D. DISCUSSION

The WAIS-V scores were significantly different for Negroes and whites, while the WAIS-P scores were significantly different for the brain-damaged and non-brain-damaged groups. An examination of the means in Table 1, however, reveals that the Negro female scored particularly low on both variables in both the brain damaged and non-brain-damaged groups. The small sample size of Negro females may detract from the significance of these findings; hence further research is indicated especially in view of the significance of the brain damaged and race interactions determined in the WRAT-WR and CPM-A_B analyses.

The largest difference in the entire study, and the only one significant at the .01 level, was the difference in the CPM-A_B scores between the brain-damaged and non-brain-damaged groups. This difference is minimized, although still significant at the .05 level, when the CPM-A_B scores are added to the CPM-A and CPM-B scores to form the CPM-Tot score. Moreover, these differences in the CPM-A_B scores, as shown in the analysis of covariance, cannot be attributed merely to differences in intelligence and achievement, at least as measured by the WAIS and WRAT, respectively.

Sperrazzo and Wilkins (4) found no CPM racial score differences for lower socioeconomic groups and, likewise, no such differences were found in the present study for lower IQ groups. Similar to the Urner, Morris, and Wendland (5) study, however, there were statistically significant differences in the CPM-A_B scores for the brain-damaged and non-brain-damaged groups even beyond differences in intelligence and achievement.

E. SUMMARY

A sample of 147 educationally or mentally retarded persons were administered the CPM, the WAIS, and the WRAT. The persons were classified on the basis of race, sex, and brain damage. Race differences were found in the WAIS-V and WRAT-WR, while brain-damage differences were determined in the WAIS-P, CPM-Tot, and CPM-A_B. The brain-damage differences in the CPM-A_B test could not be attributed to varying achievement and intelligence levels.

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STATUS OF FRUSTRATOR AS AN INHIBITOR OF HORN-HONKING RESPONSES*¹

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A. INTRODUCTION

Subjects may consciously attempt to present themselves in a favorable manner, they may cooperate with the experimenter or interviewer, and their reactions may be affected by the measurement process itself. In reviewing a number of such problems, Webb *et al.* (6, pp. 13-27) point out that some of these sources of contamination can be avoided when field data are collected from people who are unaware that they are subjects participating in an experiment. Although field procedures can reduce demand and reactivity effects, experimental manipulations outside of the laboratory may gain realism at the expense of control. The study reported here is an attempt to investigate unobtrusively some effects of frustration in a naturalistic setting without sacrificing experimental control.

Modern automobile traffic frequently creates situations which closely resemble classical formulations of how frustration is instigated. One such instance occurs when one car blocks another at a signal-controlled intersection. Unlike many traffic frustrations, this situation provides a clearly identifiable frustrator and a fairly typical response for the blocked driver: sounding his horn. Horn honking may function instrumentally to remove the offending driver and emotionally to reduce tension. Both kinds of honks may be considered aggressive, especially if they are intended to make the frustrator uncomfortable by bombarding him with unpleasant stimuli.

One factor that is likely to affect aggressive responses is the status of the frustrator (2, 3). The higher a person's status, the more likely it is he will have power to exercise sanctions, and although it is improbable that a high status driver would seek vengeance against a honker, fear of retaliation may

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¹ We wish to thank Tina Fox and Mike Rosenberg, the observers in the field experiment, and Lorraine Soderstrum of Foothill College, Los Altos Hills, California, who made her class available for the questionnaire experiment. The first author was supported by a Public Health Service Predoctoral Fellowship.

generalize from other situations where aggression against superiors has been punished.

Aggression is not the only kind of social response that may be affected by status. High status may inhibit the initiation of any social response, even a simple informational signal. Although it is difficult in the present study to distinguish informational from aggressive motivation, it is hypothesized that a high status frustrator will generally inhibit horn honking.

B. METHOD

One of two automobiles, a new luxury model or an older car, was driven up to a signal controlled intersection and stopped. The driver was instructed to remain stopped after the signal had changed to green until 15 seconds had elapsed, or until the driver of the car immediately behind honked his horn twice. Subjects were the 82 drivers, 26 women and 56 men, whose progress was blocked by the experimental car. The experiment was run from 10:30 a.m. to 5:30 p.m. on a Sunday, in order to avoid heavy weekday traffic.

1. *Status Manipulation*

A black 1966 Chrysler Crown Imperial hardtop which had been washed and polished was selected as the high status car.² Two low status cars were used: a rusty 1954 Ford station wagon and an unobtrusive gray 1961 Rambler sedan. The Rambler was substituted at noon because it was felt that subjects might reasonably attribute the Ford's failure to move to mechanical breakdown. Responses to these two cars did not turn out to be different, and the data for the two low status cars were combined.

2. *Location*

Six intersections in Palo Alto and Menlo Park, California, were selected according to these criteria: (a) a red light sufficiently long to insure that a high proportion of potential subjects would come to a complete stop behind the experimental car before the signal changed to green, (b) relatively light traffic so that only one car, the subject's, was likely to pull up behind the experimental car, and (c) a narrow street so that it would be difficult for the subject to drive around the car blocking him. Approximately equal numbers of high and low status trials were run at each intersection.

² We have labeled this operation a "status manipulation" because a large expensive car is frequently associated with wealth, power, and other qualities which are commonly regarded as comprising high status. However, it could be argued that Chrysler is potentially inhibiting not because it is a status symbol, but because of some other less plausible attribute (e.g., physical size).

3. Procedure

By timing the signal cycle, the driver of the experimental car usually managed to arrive at the intersection just as the light facing him was turning red. If at least one other car had come to a complete stop behind the experimental car before the signal had turned green, a trial was counted, and when the light changed, an observer started two stop watches and a tape recorder. Observers were usually stationed in a car parked close to the intersection, but when this was not feasible, they were concealed from view in the back seat of the experimental car. High and low status trials were run simultaneously at different intersections, and the two driver-observer teams switched cars periodically during the day. Drivers wore a plaid sport jacket and white shirt while driving the Chrysler, and an old khaki jacket while driving the older car.

a. Dependent measures. At the end of each trial, the observer noted whether the subject had honked once, twice, or not at all. Latency of each honk and estimated length of each honk were recorded and later double-checked against tape recordings.

b. Subject characteristics. Immediately after each trial, the observer took down the year, make, and model of the subject's car. Sex and estimated age of driver, number of passengers, and number of cars behind the experimental car when the signal changed were also recorded.

C. RESULTS AND DISCUSSION

Eight subjects, all men, were eliminated from the analysis for the following reasons: four cars in the low status condition and one in the high status condition went around the experimental car; on one trial the driver of the experimental car left the intersection early; and two cars in the low status condition, instead of honking, hit the back bumper of the experimental car, and the driver did not wish to wait for a honk. This left 38 subjects in the low status condition and 36 in the high status condition.

Although the drivers of the experimental cars usually waited for 15 seconds, two of the lights used in the experiment were green for only 12 seconds; therefore 12 seconds was used as a cutoff for all data. There were no differences attributable to drivers or intersections.

The clearest way of looking at the results is in terms of the percentage in each condition that honked at least once in 12 seconds. In the low status condition 84 per cent of the subjects honked at least once, whereas in the high status condition, only 50 per cent of the subjects honked ($\chi^2 = 8.37$, $df = 1$, $p < .01$). Another way of looking at this finding is in terms of the latency of the first honk. When no honks are counted as a latency of 12 seconds, it

can be seen in Table 1 that the average latency for the new car was longer for both sexes. ($F = 10.71$, $p < .01$).

Thus, it is quite clear that status had an inhibitory effect on honking even once. It could be argued that status would have even greater inhibitory effects on more aggressive honking. Although one honk can be considered a polite way of calling attention to the green light, it is possible that subjects felt that a second honk would be interpreted as aggression.³

TABLE 1
FIELD EXPERIMENT (MEAN LATENCY OF FIRST HONK IN SECONDS)

Frustrator	Sex of driver	
	Male	Female
Low status	6.8 (23)	7.6 (15)
High status	8.5 (25)	10.9 (11)

Note: Numbers in parentheses indicate the number of subjects.

Forty-seven per cent of the subjects in the low status condition honked twice at the experimental car, as compared to 19 per cent of the subjects in the high status condition ($\chi^2 = 5.26$, $df = 1$, $p < .05$). This difference should be interpreted cautiously because it is confounded with the main result that more people honk generally in the low status condition. Of those who overcame the inhibitions to honk at all, 56 per cent in the low status condition and 39 per cent in the high status condition honked a second time, a difference which was not significant. First-honk latencies for honkers were about equal for the two conditions. The overall findings are presented in Table 2.

TABLE 2
NUMBER OF DRIVERS HONKING ZERO, ONE, AND TWO TIMES

Frustrator	Honking in 12 seconds		
	Never	Once	Twice
Low status	6	14	18
High status	18	11	7

Note: Overall $\chi^2 = 11.14$, $p < .01$.

Sex of driver was the only other measure that was a good predictor of honking behavior. In both conditions men tended to honk faster than women ($F = 4.49$, $p < .05$). The interaction of status and sex did not approach significance ($F = 1.17$). These data are consistent with laboratory findings (1) that men tend to aggress more than women.

Most experiments designed to study the effects of frustration have been

³ Series of honks separated by intervals of less than one second were counted as a single honk.

carried out in the laboratory or the classroom, and many of these have employed written materials (2, 5).

It is undoubtedly much easier to use questionnaires, and if they produce the same results as field experiments, then in the interest of economy, they would have great advantage over naturalistic experiments. However, over 30 years ago, LaPiere warned that reactions to such instruments "may indicate what the responder would actually do when confronted with the situation symbolized in the question, but there is no assurance that it will" (4, p. 236).

In order to investigate this relationship between actual and predicted behavior, an attempt was made to replicate the present study as a questionnaire experiment. Obviously, the most appropriate sample to use would be one comprised of motorists sampled in the same way that the original drivers were sampled. Because this was not practicable, a questionnaire experiment was administered in a junior college classroom.

Subjects were 57 students in an introductory psychology class. Two forms of the critical item were included as the first of three traffic situations on a one-page questionnaire: "You are stopped at a traffic light behind a black 1966 Chrysler (gray 1961 Rambler). The light turns green and for no apparent reason the driver does not go on. Would you honk at him?" If subjects indicated that they would honk, they were then asked to indicate on a scale from one to 14 seconds how long they would wait before honking. Forms were alternated so that approximately equal numbers of subjects received the Chrysler and Rambler versions. Verbal instructions strongly emphasized that subjects were to answer according to what they actually thought they would do in such a situation. No personal information other than sex, age, and whether or not they were licensed to drive was required.

After the questionnaire had been collected, the class was informed that different kinds of cars had been used for the horn-honking item. The experimenter then asked subjects to raise their hands when they heard the name of the car that appeared in the first item of their questionnaire. All subjects were able to select the correct name from a list of four makes which was read.

One subject (a female in the high status condition) failed to mark the honk latency scale, and another subject in the same condition indicated that she would go around the blocking car. Both of these subjects were eliminated from the analysis, leaving 27 in the high status condition and 28 in the low status condition. The results were analyzed in the same manner as the latency data from the field experiment. Means for each condition broken down by sex are presented in Table 3. Males reported that they thought that they would honk considerably sooner at the Chrysler than at the Rambler, whereas

this was slightly reversed for females (interaction of sex and status $F = 4.97$, $p < .05$). Eleven subjects, six males in the low status condition and five females in the high status condition indicated that they would not honk within 12 seconds.

TABLE 3
QUESTIONNAIRE EXPERIMENT (MEAN LATENCY OF HONKING IN SECONDS)

Frustrator	Sex of subject	
	Male	Female
Low status	9.1 (18)	8.2 (10)
High status	5.5 (13)	9.2 (14)

Note: Numbers in parentheses indicate the number of subjects.

It is clear that the behavior reported on the questionnaire is different from the behavior actually observed in the field. The age difference in the samples may account for this disparity. Median estimated age of subjects in the field was 38, compared to a median age of 22 in the classroom. In order to check the possibility that younger males would indeed honk faster at the high status car, the field data were reanalyzed by age. The results for younger males, estimated ages 16 to 30, fit the general pattern of the field results and differed from the results of the classroom experiment. In the field, young males honked sooner at the Rambler than at the Chrysler ($t = 2.74$, $df = 11$, $p < .02$).

Unfortunately, because these two studies differed in both sample and method, it is impossible to conclude that the differences are due to differences in the method of collecting data. However, it is clear that questionnaire data obtained from this often used population of subjects do not always correspond to what goes on in the real world.

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PERSONALITY AND ATTITUDE CORRELATES OF POLITICAL CANDIDATE PREFERENCE*¹

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A. INTRODUCTION

The 1964 U.S. presidential election provided a further opportunity to investigate the relationship of political behavior to personality and attitude dimensions. The speeches and images presented by the major presidential candidates, Barry Goldwater and Lyndon Johnson, clearly offered the voter two greatly differing political ideologies, or, in Goldwater's words, "A choice, not an echo." The work of Adorno and his co-workers indicated that certain ideological orientations (autocratic-democratic) and personality patterns (authoritarian-equalitarian) can be expected to be consistently related to each other (1). The Democratic and Republican presidential candidates at no time in the recent past offered political philosophies so divergent in their conservative-liberal emphases. Thus it was felt that if the above relationships held, different personality characteristics would be related to different candidate preferences in the 1964 election.

This study was undertaken to confirm the existence of such a relationship and to broaden the scope of the findings of previous studies in this area. Most of the previous investigations did not focus on only two candidates so clearly different in the liberal and conservative ideological stances which they presented (6, 11, 12, 14), nor have most of the studies (5, 6, 11, 12, 14) been done shortly before the actual election when these ideologies were expected to reflect the cumulative effect of repeated campaign pronouncements. Most research used as subjects young college students who were predominantly below voting age (6, 11, 14), where a wider age range would have been more

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appropriate to the phenomenon under study. Finally, previous studies usually investigated only one or two personality variables² (5, 6, 11, 12).

Accordingly, a questionnaire was used to measure three personality variables and one political attitude variable; and a somewhat broader sample was used than had been employed in most previous studies. The subjects' candidate preference was elicited near the time of the 1964 presidential election, and personality and attitude characteristics as they related to political preference were examined.

B. METHOD

1. Subjects

In an effort to obtain a broader range of respondents than usually had been sampled in previous studies of this kind, a majority of the sample was obtained from evening college classes, which were expected to contain a wider age and, presumably, a wider socioeconomic range than day college classes. Five evening classes at Northwestern University, as well as four day classes at the University of Chicago, Chicago Medical School, and Elmhurst College were used. Of the 258 subjects, 172 were in the 15-24 age group, 63 were 25-34 years old, 20 were in the 35-44 age range, and three were 45 and over. Each age group was approximately equally divided by sex. Socioeconomic, education, and residence data were not obtained. Because a majority of subjects were evening school students, it is assumed there was a moderate socioeconomic range. Because all respondents were at least high school graduates and were residing within commuting distance of Chicago, it is assumed there was a more restricted education and residence range.

2. Procedure

A 60-item questionnaire, a modification of the T.A.P. Social Attitude Battery (7) was used to measure the three personality variables and the one political attitude variable. The T.A.P. has its theoretical and conceptual roots in the work of Adorno *et al.* (1). The modification used contained 24 items from the Fascism (F) Scale, measuring a general continuum of authoritarian-equalitarian trends in conceptions of self, modes of handling anxiety, and view of the world. It also contained 12 items from the Religious Conventionalism (RC) Scale, measuring a continuum of attitudes concerning religious practice ranging from a conservative, ritualistic, orthodox cluster on one end to a liberal, nonritualistic, individualistic cluster on the other. There were 12 items

² An exception to all these points is the work of McClosky (10) which, however, is concerned with political *beliefs* rather than actual or simulated political *behavior*.

from the Traditional Family Ideology (TFI) Scale (8), measuring a similar continuum of orientations regarding family structure and function involving attitudes of hierarchization of functions, discipline, sex role definition, and the like. The questionnaire also included 12 items from the Politico-Economic Conservatism (PEC) Scale, which is thought to measure politicoeconomic orientations on an autocratic-democratic continuum, rather than more personality-weighted characteristics. The PEC subscale was included as a check on the accuracy of the assumption that the two candidates would actually appeal to groups differing in their basic political ideologies.

The questionnaires were group administered. On each questionnaire respondents were asked to supply their age and sex, but not their names. They were not told the purpose of the project until after the entire procedure had been completed. The questionnaire was administered from one day to one week before the 1964 presidential election. After all persons in a class had completed the questionnaire, they were instructed to indicate their voting status (intend to vote, do not intend to vote, below voting age, or alien). Then they were instructed to turn to the last page of the questionnaire and to indicate, on the blank line provided, for which of the two presidential candidates they would vote if they were in the voting booth at that moment. They were then asked to indicate who they expected would win the actual national election. Anonymity of the subjects' responses was stressed and assured.

C. RESULTS

Overall candidate preference results (67 per cent for Johnson and 33 per cent for Goldwater) were similar to the national election results (61 per cent to 39 per cent) and even more congruent with the results for Cook County, Illinois (64 per cent to 36 per cent), where most of the respondents resided. The respondents were divided on the basis of their candidate preference into two groups. The questionnaire mean scores, for the F, RC, TFI, and PEC subscales respectively, for the Johnson group ($N = 174$) were 2.99, 3.36, 2.81, and 4.11; those for the Goldwater group ($N = 84$) were 3.39, 3.96, 3.50, and 5.14. Subscale mean scores could potentially range from 1 (egalitarian-democratic) to 7 (authoritarian-autocratic).

A Type I analysis of variance (9, pp. 267-273) of the questionnaire results is summarized in Table 1. Because of the significant interaction, separate one-way analyses of variance for each subscale were computed to determine the nature of the differences in the subscale scores of the two Presidential Preference groups. The analyses of variance indicated that the Goldwater group scored significantly more toward the authoritarian-autocratic end of the

continuum on all four subscales than the Johnson group. The results were as follows ($df = 1,256$ in all cases): F Scale— $F = 13.55$; $p < .001$; RC Scale— $F = 7.35$; $p < .01$; TFI Scale— $F = 26.73$; $p < .001$; and PEC Scale— $F = 67.75$; $p < .001$. All of the differences were consistently in the same direction, but the magnitude of the differences, while statistically significant, was not consistent, thus accounting for the Presidential Preference \times Subscale interaction.

TABLE 1
ANALYSIS OF VARIANCE OF QUESTIONNAIRE RESULTS

Source of variation	<i>df</i>	<i>MS</i>	<i>F</i>
Presidential preference (PP)	1	104.56	
Between subjects	256	2.84	36.82**
Subscale (SS)	3	106.66	
PP \times SS	3	3.83	127.02**
Within subjects	768	0.86	4.45*

* $p < .005$.

** $p < .001$.

Analysis of the demographic data collected with the questionnaires revealed interesting incidental results. Younger respondents overwhelmingly preferred Johnson to Goldwater 130 to 42, but in the 25-34 age range this ratio began to change, 34 to 29, and those over age 34 gave Goldwater the edge in preference, 10 to 13 ($\chi^2 = 16.40$, $df = 2$, $p < .001$). Subjects too young to vote preferred Johnson, 83 to 16, more than did those who were of voting age, 91 to 68 ($\chi^2 = 19.67$, $df = 1$, $p < .001$). Proportionally more females preferred Johnson, 97 to 38, than did males, 77 to 46, but this trend was not significant ($\chi^2 = 2.51$, $df = 1$, $p < .20$). Finally, while a preponderance of the Goldwater group thought Johnson would win the national election, 69 to 14, an even greater preponderance of the Johnson group was confident of his ultimate success, 170 to 4 ($\chi^2 = 18.38$, $df = 1$, $p < .001$).

In an attempt to elucidate further the roles that the various measures—i.e., the four subscales, age, and sex—played in candidate preference, a discriminant analysis was performed (2, pp. 116-123). The first discriminant equation, with the use of standard coefficients, is as follows:

$$D = -0.031F - 0.181RC + 0.475TFI \\ + 0.691PEC + 0.308 \text{ Age} + 0.052 \text{ Sex}$$

The derived discriminant means are D (Goldwater) = 5.504 and D (Johnson) = 4.321. From the discriminant analysis, a discriminant pattern was

obtained (Table 2) according to a method devised by Black.³ That pattern is, in effect, a factor analysis of the total covariance matrix out of which is derived one factor, rotated so as to maximize the variance between group means. The hypothetical construct that was derived can be called a general Liberal-Conservative factor, and as seen from Table 2, it loads most highly on Politicoeconomic Conservatism, Traditional Family Ideology, and Age, in that order.

TABLE 2
DISCRIMINANT PATTERN

Measure	Loading
F Scale	0.419
RC Scale	0.365
TFI Scale	0.597
PEC Scale	0.889
Age	0.532
Sex	0.192

Although the demographic data and the results of the discriminant analysis indicated some relationship between age and candidate preference, age did not appear to contribute significantly to the differences in scores on the questionnaire subscales. In a three-way analysis of variance including Age as a variable, there was no significant main effect of Age ($F = 2.02$, $df = 2,252$, $p > .05$), nor were there significant interaction effects of Age with Subscale ($F = 2.09$, $df = 6,756$, $p > .05$), with Presidential Preference ($F < 1$), and with Subscale Score and Presidential Preference ($F < 1$).

Pearson product-moment intercorrelations between the three personality subscales were all at least $+.52$ and were all significantly different from zero at $p < .001$. This may be due to the conceptual relation of the subscales, since all were derived from the same theoretical framework. The intercorrelations may also be taken to support both the general hypothesis that individuals are consistent in their attitudinal orientations toward social institutions (8) and the specific hypothesis of this study that political behavior is related to patterns of personality and attitudinal factors on an authoritarian-equalitarian dimension.

³ M. Black, personal communication. The discriminant pattern is derived by scaling the discriminant coefficient matrix such that the discriminants are represented by unit variance. The matrix of discriminant coefficients is then inverted to obtain the discriminant pattern.

D. DISCUSSION

On the assumption that the subscales are valid measures of the factors they are purported to measure, and there is evidence that this is so (1, 8), the characteristics of the typical high-school educated Goldwater and Johnson voter and, by extension, the conservative and liberal, may be compared. The former, as compared to the latter, tended to be more conventional, was more rigid in his conceptualization of sex roles and family structure, was older, was more punitive, tended to idealize and submit to authority more readily, and tended more to reject impulse life moralistically. Most characteristic of the Goldwater voter, as expected, was his stronger autocratic and conservative orientation in the politicoeconomic sphere, as measured by the PEC Scale which, as noted above, loads most highly on the Conservative-Liberal factor. The greater "power" of the PEC Scale may be due only to differences in scale construction. It may, however, be taken to support the assumption that this subscale reflects politicoeconomic orientations (to which the candidates manifestly appealed) rather than a pattern of more personality-weighted traits (to which, presumably, the candidates only latently appealed), and that politicoeconomic orientations were stronger than personality factors in guiding presidential preference behavior.⁴

The descriptive characteristics differentiating the Goldwater and Johnson groups, although clear-cut, must be interpreted with some precautions in mind. As Koenig (4) indicated, when the sample studied consists of college students or college-educated people, a relationship between authoritarian trends and conservative ideology is usually found, but when the sample consists of all education levels or of lower education levels, such a relationship is not usually found. Second, as Leventhal *et al.* (6) have suggested, a study of this kind cannot determine whether authoritarian personality "causes" conservatism and accounts for the appeal of a conservative candidate, or whether the same environment fosters both authoritarianism and conservatism.

It is recognized that a great variety of experience goes into the formation of political attitudes, beliefs, and behaviors. Still, from the results of this study, it can be postulated that an individual's personality possesses disposi-

⁴ Two recent investigations have come to light since this study was done, and they corroborate some of the present findings. Rossmann and Campbell (13) found that self-described "Liberal Democrats" ($N = 159$) and "Conservative Republicans" ($N = 284$) differed significantly in degree of religiosity and in pride in family accomplishments. These differences were similar to the RC and TFI Scale differences found here. Goldberg and Stark (3) found that 17 Johnson female students and a special scale of religious orthodoxy in the same direction as the differences found here.

tional elements, developed throughout his life, that attune him to the positions taken by one political candidate or the other, and that this process expresses itself, naturally enough, in his political behavior. Political ideology plays an important role in political behavior, as witness the fact that the Goldwater group and the Johnson group were most strongly differentiated by the PEC Scale than by any of the personality scales. But this study has demonstrated that a range of personality factors also plays a role, and these factors should receive more attention than they have received previously. It is suggested that research which takes a developmental focus will best be able to sort out the antecedent-consequent relationships in political behavior and personality.

E. SUMMARY

To investigate further the relationship between ideological orientation (autocratic-democratic) and personality factors (authoritarian-equalitarian), measures of both were taken on 258 day and evening college students. After completing a questionnaire containing three personality subscales and one political orientation subscale, from one to seven days before the 1964 presidential election, the subjects were asked to indicate their presidential preference. Those who preferred Goldwater ($N = 84$) scored significantly ($p < .01$) more toward the authoritarian or autocratic side on all four questionnaire subscales than did those who preferred Johnson ($N = 174$). The results indicate a relationship between conservative voting and authoritarianism-autocracy in several areas of personality and attitude functioning. Characteristics of the two voter groups were derived and are described.

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PERSONALITY CHARACTERISTICS, RACE, AND GRADES
AS DETERMINANTS OF INTERPERSONAL ATTITUDES*¹

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A. INTRODUCTION

Personality is often defined as ". . . an organization of stable structures within a person that dispose him to act in certain ways" (8). The actual manifestation of personality is in the form of motives, needs, attitudes, modes of perceiving, habits, etc., and is, at least, tempered and molded by social experience. Thus the sources of personality and behavioral intentions overlap to a certain extent. In fact Newcomb (10) defined personality as "the individual's organization of predispositions to behavior." It seemed, therefore, that measures of the personality of *P* should correlate in some way with measures of his behavioral intentions.

The interpersonal scheme of studying personality developed by Leary and his associates (9), in fact, seems to rest on the assumption that an individual's preferred manner of interacting with people (his personality) will determine what kind of individuals he will choose to deal with and how he will interact with them. His usual manner of interacting with people, Leary maintained, will serve to minimize his anxiety and to maintain his self-esteem. For example, a cooperative person will feel most at ease when he can cooperate with others, but will feel anxious when forced to compete. In a very similar vein Newcomb (11) suggested that it seems plausible that an assertive individual would find it more rewarding to interact with one who is receptive to his assertiveness than with a person who is not. Blake (3) wrote that personality attributes of the actor are important in connection with many kinds of behavior, and that their influence must be considered in any in-

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¹ This study is based on the thesis submitted by the first author to the Department of Psychology of the University of Illinois in partial fulfillment of the requirements for the degree of Master of Arts. This study was conducted under the second author's supervision. The work was partially supported by the contract to study the behavior of culturally heterogeneous groups, between the University of Illinois and the Office of Naval Research and the Advanced Research Projects Agency, Contract NR 177-472, Nonr-1834(36), ARPA Order 454, Fred E. Fiedler and Harry C. Triandis, Principal Investigators.

clusive theory of behavior. These lines of argument led us to the hypothesis that the Ss' personalities should be expressed in behavioral intentions.

Behavioral intentions may be studied by an instrument developed by Triandis (14). Complex stimulus persons are presented to Ss who are asked to indicate whether they would or would not undertake certain behaviors with the described persons. A typical item has the following format:

A 50-year-old, white, Roman Catholic, physician, female

would: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : would not

 Accept as an intimate friend

Previous work with this instrument utilized factor analyses of the correlation matrices of the behavior scales. The following factors were found for American Ss:

Factor I—Formal Social Acceptance *vs.* Formal Social Rejection with Subordination. Acceptance on this factor was defined by high loadings on such scales as "I would admire the character of," "I would ask for the opinion of," "I would invite to my club," etc. A shorter name for this factor, used in a cross-cultural replication study, is "Respect" (17).

Factor II—Marital Acceptance *vs.* Marital Rejection. Acceptance on this factor was defined by high loadings on such scales as "I would love," "I would date," "I would marry," etc.

Factor III—Friendship Acceptance *vs.* Friendship Rejection. Acceptance on this factor was defined by high loadings on such scales as "I would talk with," "I would accept as an intimate friend," "I would be partners in an athletic game with this person," etc.

Factor IV—Social Distance. This factor was defined by high loadings on such scales as "I would not accept as a close kin by marriage," "I would not permit to vote," "I would exclude from my neighborhood," etc.

Factor V—Self-subordination. This factor was defined by high loadings on such scales as "I would not treat as a subordinate," "I would admire the ideas of," "I would not command," etc.

These five factors represent five dimensions of the behavioral component of attitudes. Triandis' (14) Behavioral Differential (BD) is a questionnaire consisting of behaviors with high loadings on these factors.

The BD has been used extensively in studies of interpersonal attitudes. Triandis (15) has reviewed most of these studies. Results to date suggest that Ss modify their interpersonal attitudes in response to changes in the characteristics of stimulus persons in highly systematic ways. However, the

limits of these relationships remain unexplored. It seems reasonable to think that the personality of the stimulus person, *O*, is relevant to the characteristics that a person, *P*, infers that *O* possesses. These characteristics in turn determine the relationship that exists between *P* and *O*. For example, *P* might feel that *O* would be hard to work with, or a dependent *P* might think that a particular *O* would be helpful, etc. This line of reasoning was supported by research in interpersonal attraction and interpersonal perception (1, 4). The first part of the present study, then, was focused on an attempt to measure the influence of personality variables of *O* in the determination of interpersonal behavioral intentions. The second part centered on measuring the influence of the *S*'s personality in the determination of behavioral intentions.

B. METHOD

1. *Subjects*

Ninety-seven white, male University of Illinois students obtained from the Introductory Psychology subject pool served as *Ss*.

2. *Questionnaire*

Sixteen stimulus persons were used. All stimulus persons were said to be male University of Illinois students. In addition, they were described by utilizing all combinations of the following four facets: Negro-white, extravert-introvert, agreeable-nasty, and "A" student-"C" student. Thus, one of the stimuli was "An 'A' student, Negro, introvert, and agreeable." The two personality facets represent the two factors controlling the most variance in the peer personality rating data reported by Norman (12). He described each of these factors with several adjectives. One who was high on the first factor was said to be talkative, frank (or open), adventurous, and sociable. Those low on this factor were silent, secretive, cautious, and reclusive. High scores on the second factor described a person who was good-natured, not jealous, mild (or gentle), and cooperative. Those low on this factor were irritable, jealous, headstrong, and negativistic. These adjectives were used in the instructions and in addition it was pointed out that "nasty" did not mean vicious.

The BD scales were taken from Triandis' study (14); however, the marital factor was omitted because the sex of the stimulus person was not varied. The examples of the scales loading high on factors I, III, IV, and V, which were given above in the summary of Triandis' (14) article, were the scales actually used in this questionnaire. It was felt that grades, a form of achieve-

ment of a fellow student, as well as personality, would be important in determining whether an *S* would be willing to undertake a variety of work behaviors with the stimulus person. Therefore, three scales were constructed which gave opportunity for the expression of such intentions. These behaviors were "I would study for an exam with this person," "I would work with this person," and "I would be a lab partner with this person." Five Semantic Differential (SD) scales were also employed (13). Three of these were evaluation scales ("good—bad," "dirty—clean," and "valuable—worthless"), one activity scale ("active—passive"), and one familiarity-believability scale ("likely—unlikely"). Thus, a total of 20 scales were used: 15 BD and five SD scales. Through summation of the appropriate scales a total of eight variables were to be measured: five BD factors (formal social acceptance, friendship acceptance, social distance, self-subordination, and work acceptance) and three SD measures (evaluation, activity, and likelihood). These eight variables were subsequently reduced to five during the processing of the data.

The personality questionnaire used to assess the *Ss'* interpersonal orientations was the Interpersonal Check List (7, 9). This adjective checklist was chosen because it was designed to measure substantive aspects of interpersonal behavior. It consists of a list of 128 adjectives or phrases to which the *Ss* respond by either checking or not checking the items. The adjectives are divided into eight groups for analysis, and each *S* is assigned eight scores by totaling the checks in each category. The categories of the Interpersonal Check List (ICL) are labeled: Managerial—Autocratic, Competitive—Exploitive, Blunt—Aggressive, Skeptical—Distrustful, Modest—Self Effacing, Docile—Dependent, Cooperative—Overconventional, and Responsible—Overgenerous. The directions for answering the ICL were taken from La-Forge (6).

3. *Analysis*

Since the behaviors of the work-with acceptance scales were constructed especially for this study and since the facets of the stimuli were of a different type than those used in earlier studies, the first step in the analysis was a principal axis factor analysis of the intercorrelations of the 20 scales and a Varimax rotation of the factors. This procedure was used to confirm that the work-with acceptance scales were loading together and that the other behaviors were forming the same factors as had appeared in previous research. A composite score was then computed for each factor with the use of the means of the *Ss'* responses on the scales which loaded high on the obtained rotated factors. A four-way ($2 \times 2 \times 2 \times 2$) analysis of variance was performed

for each factor, while the facets of the stimuli were considered as treatments. Each cell of the analysis of variance (one cell for each stimulus person) contained a composite score for each of the 97 Ss. This analysis yielded the percentage of variance accounted for by each of the facets and by the interactions of the facets of the description of the stimulus persons. In previous studies Triandis had been interested in cultural differences, not individual differences, and thus the residual variance had been removed from the total variance. To make this study more comparable to earlier work using the BD, this method of calculating the percentage of variance controlled by the stimulus variables (nonrandom variance) was also reported.

The second part of the study used the two-mode method of factor analysis developed by Tucker and Messick (18) for finding idealized *S* types. The same composite scores described above in reference to the analysis of variance calculations were used as the variables in this procedure. Thus each of the 16 stimulus persons was rated on five factors (see "Results" for these factors), giving a total of 80 variables for each of the 97 Ss. The two-mode analysis utilized the 97×97 matrix of cross-products and yielded each *S*'s loadings on the rotated *S* factors. In addition the loadings of the 80 variables upon these same factors were calculated. These variable loadings permitted the *S* factors to be identified. The loadings of the Ss on the *S* factors were then treated as variables and placed in a correlation matrix with the eight ICL scores. This matrix was factor analyzed by the principal axis method and the factors rotated by the Varimax method in order to relate the *S* factors (types) to the ICL scores. In addition, a multiple regression analysis was employed to obtain the multiple correlations between the eight ICL scores which were treated as the predictors and the four *S* factor loadings which were treated as the criteria.

C. RESULTS

1. *Factor Analysis of the Questionnaire*

The factor analysis of the 20×20 matrix of correlations from the questionnaire yielded five factors accounting for 79.92 per cent of the variance. Table 1 contains the scales loading high on these factors and their loadings. The factors were named after consideration of the content of the scales loading the highest on the respective factors. Factor scores were found by taking the means of the responses of the scales loading the highest on the respective factors.² These scales are indicated in Table 1.

² Reliability of the factor scores was found by repeating the first stimulus person toward the middle of the questionnaire and correlating the two sets of responses. The

TABLE 1
RESULTS OF THE FACTOR ANALYSIS OF THE INTERCORRELATIONS OF THE SCALES

Scale	Varimax rotation loading
<i>Factor I: Instrumental Friendship^a</i>	
Would ask for the opinion of this person ^b	.81
Would admire the ideas of this person ^b	.77
Would study for an exam with this person ^b	.78
Would be a lab partner with this person ^b	.70
Would admire the character of this person	.59
Worthless (the opposite of which was "Valuable")	-.57
Would accept as an intimate friend	.55
Percentage of variance accounted for: 28.25	
<i>Factor II: Expressive Friendship^a</i>	
Would be partners in an athletic game with this person ^b	.80
Would work with this person ^b	.64
Would eat with this person ^b	.60
Would be a lab partner with this person	.42
Would invite this person to my club	.41
Percentage of variance accounted for: 14.81	
<i>Factor III: Evaluation</i>	
Clean (the opposite of which was "Dirty") ^b	.83
Bad (the opposite of which was "Good") ^b	-.70
Valuable (the opposite of which was "Worthless") ^b	.56
Percentage of variance accounted for: 13.36	
<i>Factor IV: Social Distance</i>	
Would accept as a close kin by marriage ^b	-.84
Would exclude this person from my neighborhood ^b	.65
Would invite this person to my club	-.50
Percentage of variance accounted for: 12.60	
<i>Factor V: Dominance</i>	
Would command this person ^b	.89
Would treat this person as a subordinate ^b	.87
Percentage of variance accounted for: 10.90	

^a This terminology corresponds to two of the kinds of group leaders found by Bales (2).

^b Responses of these scales were averaged by taking account of the sign of the loadings in order to obtain a composite or factor score for the respective factors.

responses to the first stimulus person were, however, the least reliable because the Ss had not yet developed a subjective feel for the range of the stimuli. The following reliabilities, thus, probably represent the lower bound for the reliability of the factor scores. These reliabilities were Factor I, .70; Factor II, .62; Factor III, .54; Factor IV, .51; and Factor V, .49. Calculations of the percentage of variance accounted for by each of the four facets of the stimulus persons actually used data from eight stimuli. Using the Spearman-Brown correction for test length, the following reliabilities were found: Factor I, .95; Factor II, .93; Factor III, .90; Factor IV, .89; and Factor V, .88.

2. *Analysis of Variance*

Table 2 presents the results of the five analyses of variance. This table shows how the facets of the descriptions of the stimulus persons influenced the responses on the five factors given above.

Responses to Factor I were determined mainly by the agreeable—nasty and the grade dimensions. Stimuli who were nasty or who had “C” grades were viewed as less worthy of instrumental friendship than agreeable and “A” stimuli. White stimuli and extraverted stimuli were valued more highly than Negro stimuli and introverted stimuli. The only significant interaction was between facets B and C. Extraverted, agreeable stimuli were especially attractive.

The agreeable—nasty dichotomy accounted for 90 per cent of the nonrandom variance on Factor II, Expressive Friendship. Agreeable stimuli were far more attractive than nasty stimuli. White, extraverted, and “A” stimuli were more acceptable than their respective opposite poles. In addition, the significance interaction showed that nasty “C” students were strongly rejected. By comparing the percentage of variance controlled by the facets of the stimuli on these first two factors, one can see that agreeableness was almost a requirement for acceptance on Factor II, while this trait was less important on Factor I. High grades, on the other hand, were important on Factor I which was congruent with its academic task orientation.

Evaluation responses (Factor III) were about halfway between those of the first two factors. Agreeable stimuli and “A” stimuli were evaluated more highly than their opposites; however, agreeableness was not as important as on Factor II and grades were not as important as on Factor I. The race and extravert—introvert dimensions controlled significant amounts of variance in the same directions and of about the same size as on I and II. The interactions between facets B and C and facets C and D showed that extraverted, agreeable stimuli and agreeable, “A” stimuli were evaluated especially highly.

The pattern seen in the above three factors disappeared in Factor IV, Social Distance. In this factor, race controlled 56 per cent of the nonrandom variance (Negroes were rejected); and the agreeable—nasty facet controlled 34 per cent (nasty stimuli were rejected). Grades were much less important, although “C” stimuli were rejected. Introverts were rejected to a very slight degree. The interaction between race and personality description was large; nasty Negro stimuli were rejected most strongly. Moderately unprejudiced Ss may have been unable to respond in an unprejudiced manner to nasty Negroes.

TABLE 2
FOUR-WAY ANALYSES OF VARIANCE OF FACTOR SCORES

Source	df	% Total variance	% Non-random variance	SS	F
<i>Factor I: Instrumental Friendship</i>					
Race (A)	1	.15	.35	10.64	4.30*
Extravert—Introvert (B)	1	.41	.93	28.41	11.59***
Agreeable—Nasty (C)	1	25.38	56.96	1739.9	703.26***
Grade (D)	1	17.18	38.54	1176.9	475.85***
A × B	1			6.57	
A × C	1			8.52	
A × D	1			1.16	
B × C	1	.32	.73	22.17	8.96**
B × D	1			6.57	
C × D	1			8.23	
Other interactions	5			44.46	
Residual	1536			3798.9	
<i>Factor II: Expressive Friendship</i>					
Race (A)	1	.35	1.02	23.11	8.37**
Extravert—Introvert (B)	1	.79	2.30	51.95	18.82***
Agreeable—Nasty (C)	1	30.87	89.93	2030.0	735.51***
Grade (D)	1	2.51	7.32	165.25	59.87***
A × B	1			.00	
A × C	1			2.75	
A × D	1			7.57	
B × C	1			8.13	
B × D	1			5.02	
C × D	1	.22	.64	14.34	5.20*
Other interactions	5			29.28	
Residual	1536			4239.4	
<i>Factor III: Evaluation</i>					
Race (A)	1	.53	1.07	14.14	15.81***
Extravert—Introvert (B)	1	.88	1.79	23.67	26.47***
Agreeable—Nasty (C)	1	36.23	73.96	975.55	1090.08***
Grade (D)	1	9.76	19.93	262.81	293.87***
A × B	1			.00	
A × C	1			1.80	
A × D	1			.67	
B × C	1	.49	1.00	13.24	14.24***
B × D	1			4.19	
C × D	1	.35	.72	9.50	10.62**
Other interactions	5			14.01	
Residual	1536			1373.7	
<i>Factor IV: Social Distance</i>					
Race (A)	1	20.44	55.78	1606.5	495.40***
Extravert—Introvert (B)	1	.25	.67	19.28	5.95*
Agreeable—Nasty (C)	1	12.54	34.23	985.93	304.04***
Grade (D)	1	1.81	4.94	142.33	43.89***
A × B	1			.69	
A × C	1	1.29	3.51	101.04	31.16***
A × D	1			3.62	

TABLE 2 (continued)

Source	df	% Total variance	% Non- random variance	SS	F
B × C	1			9.59	
B × D	1			1.08	
C × D	1			1.30	
Other interactions	5			8.52	
Residual	1536			4980.9	
<i>Factor V: Dominance</i>					
Race (A)	1			2.32	
Extravert—Introvert (B)	1	.34	4.28	23.02	5.77*
Agreeable—Nasty (C)	1	2.63	32.66	175.57	44.03***
Grade (D)	1	4.44	55.09	296.19	74.28***
A × B	1			2.57	
A × C	1			.17	
A × D	1			2.64	
B × C	1	.35	4.37	23.51	5.89*
B × D	1			1.55	
C × D	1			.84	
Other interactions	5			19.23	
Residual	1536			6124.8	

* $p = .01$ to $.05$.** $p = .001$ to $.01$.*** $p =$ less than $.001$.

Factor V, Dominance, accounted for a small amount of the total variance; however, grades controlled proportionally more variance on this factor than on any other factor and more than any other facet of the stimuli. Ss said that they would tend not to dominate "A" students, agreeable stimuli, or extraverted stimuli. The interaction between B and C indicated that extraverted, agreeable stimuli would not be dominated.

3. Two-Mode Factor Analysis

Four ideal S factors or types of Ss, accounting for 61.65 per cent of the variance, were found using the two-mode factor analysis. Each S received a loading on each S type. These types were then identified by the variables which loaded high on these factors. The 80 variables were the ratings of the 16 stimuli on each of the five factors from the factor analysis of the inter-correlations of the 20 questionnaire scales (Table 1). For example, the rating given the stimuli, "Nasty, white, 'A' student, introvert," on "Expressive Friendship" was one variable.

Individuals loading high on type A were more prejudiced against Negroes and more unfriendly toward nasty stimuli than were the Ss who loaded low. A comparison of the means of the actual variables for the six Ss who loaded

highest with those of the six Ss who loaded lowest on this *S* factor showed that those loading high made larger distinctions between stimuli. In other words, they made more extreme judgments when responding to the described characteristics of the stimuli. Those low on this factor (those who were least like the Ss who loaded high) tended to say they would treat all stimuli very nearly the same. They said, for example, that they would show expressive friendship to all stimulus persons. The Ss high on this factor were characterized as hostile and prejudiced, and those low on this factor as warm and unprejudiced.

Type B was very clearly a dominance *versus* nondominance type. Those high on this factor said that they would command and would subordinate all stimuli whereas those low on this type would not. This low pole is called "nondominance" because all that is known is that these subjects would *not* subordinate others. There were no variables used which measured degree of self-subordination.

Type C Ss displayed social distance toward all nasty stimuli, and low type C Ss showed social distance primarily toward Negroes. High type C individuals were, therefore, realistically differentiating among stimuli, while high type A individuals were simply hostile. Low type C Ss tended to be reserved and prejudiced.

Type D individuals were particularly attracted to agreeable stimuli on both friendship variables. In addition they showed more social distance toward Negro stimuli than did the low type D Ss. People who show high acceptance of socially attractive stimuli and at the same time hold anti-Negro attitudes can be described as sensitive to ingroup-outgroup distinctions. Low type D Ss, in contrast to low type A and low type C Ss, tended to choose the middle options of the scales rather than the extreme options. Low type D Ss were characterized as reserved individuals, although this result might be due to a response set. The four types are summarized in Table 3.

4. *Relationship Between Types and Personality Scores*

The Ss' loadings on the four *S* factors were placed in the same matrix with their eight ICL scores and the resulting 12×12 correlation matrix was factor analyzed by the principal axis method. The solution was rotated using the Varimax procedure and the results are given in Table 4. It was found that the personality scores and *S* type loadings did not load together to a large degree on any of the factors. The ICL scores which loaded together on factors Alpha, Beta, and Gamma were almost an exact replication of the factor analysis performed by Wiggins (19) on the ICL.

TABLE 3
SUMMARIZATION OF THE FOUR SUBJECT TYPES FOUND WITH THE
USE OF THE TWO-MODE ANALYSIS

Type	Degree subject conforms to the ideal type	
	High	Low
A	Low expressive friendship toward nasty stimuli. Social distance toward Negroes. Hostile—prejudiced.	High expressive friendship toward all stimuli. Very little social distance toward Negroes. Liberal—warm. Nondominant.
B	Dominant.	
C	Low instrumental friendship for and low expressive friendship toward nasty stimuli. Moderately low instrumental friendship for "C" stimuli. Realistically nonrespectful.	Treat all stimuli about the same on instrumental and expressive friendship variables. Moderate social distance toward Negroes. Reserved—prejudiced.
D	High instrumental friendship for and very high expressive friendship toward agreeable stimuli. Social distance toward Negroes. Highly sensitive to ingroup outgroup differences.	Midrange attitudes toward most stimuli. Reserved.

TABLE 4
LOADINGS FROM THE FACTOR ANALYSIS OF THE MATRIX OF SUBJECT TYPE
AND PERSONALITY SCORES

Variable	Varimax rotated loading
<i>Factor Alpha</i>	
Blunt—Aggressive	.88
Competitive—Exploitive	.80
Skeptical—Distrustful	.80
<i>Factor Beta</i>	
Responsible—Overgenerous	.85
Cooperative—Overconventional	.82
Docile—Dependent	.72
<i>Factor Gamma</i>	
Modest—Self-effacing	.90
Managerial—Autocratic	— .52
<i>Factor Delta</i>	
Two-mode Subject Type C	.85
Two-mode Subject Type A	— .67
<i>Factor Epsilon</i>	
Two-mode Subject Type D	.83
Two-mode Subject Type B	— .56

The four multiple regression equations did not produce significant multiple correlation coefficients. The coefficients for *S* types A, B, C, and D, respectively, were .30, .35, .27, and .26.

D. DISCUSSION

The influence of the personality, grade, and race characteristics of the stimuli generally conformed to expectations. The factor analysis of the scales of the questionnaire agreed well with what previous research had suggested (14). The first factor was called "Instrumental Friendship" because it included both task oriented and friendship behaviors. Task orientation was a characteristic of one type of group leader described by Bales (2). This kind of leader is more concerned with the task than with the social function of the group. Therefore, this factor presented a different emphasis than the first factor found by Triandis. His first factor ("Respect") was made up primarily of behaviors which one would have toward persons of high social status. The stimuli which he used differed greatly in social status, since they were either physicians or soda-fountain clerks. The stimuli in the present study, on the other hand, did not vary greatly in social status. For this reason the *Ss* did not seem to perceive any stimulus person as highly worthy of respect as did the *Ss* in the original study by Triandis. College student *Ss* would very likely view "50-year-old physician" stimuli as having a great deal of status. The behaviors which defined Factor I in this study suggested respect ("ask the opinion of" and "admire the character of") and a willingness to cooperate in an academic setting ("study with" and "be lab partner with"). These are behaviors appropriate for an accepted and somewhat respected student colleague as contrasted with those appropriate for a social superior as in Triandis' first factor. This phenomenon seemed to be involved in Factor V also. In Triandis' analysis the factor was bipolar: that is, one pole was defined by such behaviors as "command" and the other pole by such behaviors as "admire." In this analysis the factor had a "would command" pole, but the other pole was merely neutral: "would not command."

Factor II included behaviors which were more purely friendship oriented. Thus this factor was called "Expressive Friendship" because these behaviors were similar to those expected of the social leader in Bales' (2) discussion.

The SD evaluation scales loaded together as was expected, and made up Factor III which was called "Evaluation." Factor IV, called "Social Distance," however, was defined only by the scales concerning marriage and neighborhood residence. The fact that "would prohibit from voting" did not load on this factor as in previous studies may indicate that this behav-

ior is less a part of Northern antiNegro prejudice than in previous years. Regardless of whether this is or is not true, Northern behavioral norms toward Negroes say more about marriage and neighborhoods than voting.

The analysis of variance results also agreed well with previous work. It was expected on the basis of the most recent studies (16, 17) that race would not control a large percentage of variance on the first three factors, but that it would on the Social Distance factor. This was shown to be the case. Behavioral norms taught to people deal most thoroughly with concrete and conspicuous behaviors involving family relations and neighborhood composition, for example. Racial prejudice in these areas of behavioral intentions is very resilient. Northern college male students are willing to respect Negroes and to have Negroes as friends, but are not willing to have them as neighbors or as brothers-in-law.

The low amount of variance controlled by the "extravert—introvert" dimension can be attributed to the lack of a clearly "bad" or socially unacceptable pole on this dimension. The other three dimensions of the stimuli had fairly well agreed upon "better" and "worse" poles and each controlled a large portion of the nonrandom variance on at least one of the factors.

The "agreeable—nasty" dimension seemed to be the one most important part of the descriptions, since this dimension determined a large share of the variance on each factor. The importance of this facet of the stimuli was probably due to its influence on the potential relationship between the nasty stimuli and the *Ss*. Relationships with a nasty individual are very likely to be unrewarding except for a masochist, and therefore the *Ss* rejected nasty stimuli. This finding supports the contention that a comprehensive theory of interpersonal attitudes or interpersonal behavior should include reference to personality variables of the perceived individual, as well as to racial, status, and the other variables which have been studied previously with the BD.

The grade of the stimuli were important in determining instrumental friendship, evaluation, and dominance responses. These results were reasonable because, in reference to Factor I, instrumental friendship behaviors would be preferably toward a competent individual (one who will get the job done); and one with high grades is more likely to be competent than one with low grades. Likewise evaluation and attempted domination would be partially determined by the achievement of *O*.

The *S* types that were found from the behavioral-intentions data by using the two-mode analysis seemed to be like real people. Type B, Dominant, was defined solely by the composite scores from Factor V, Dominance. The de-

scriptions of the stimuli on Factor V controlled a very small percentage of variance because the variance was being caused by *S* differences. Type B shows that *Ss* tended to report that they would dominate all 16 stimuli or none.

The last part of the study, relating *S* types to personality scores, did not conform to expectations. An explanation of this may be that the responses to the two questionnaires (the BD and the ICL) were derived from different sources. Answers to the BD are determined mostly by social norms. Parents, peers, and society as a whole are concerned with how an individual behaves. This concern covers general behaviors and specific behaviors. The more concrete these behaviors are, the more likely they are to be controlled by "others." Consequently, *not respecting* a Negro is less effectively enforced than a prohibition against *marrying* a Negro, and people seem less concerned about respect than about choice of a marriage partner. Answers to the ICL are attitudes about one's self as reported in an anonymous self-report personality test. Thus, they are even less subject to control by others. An individual's family might in effect say, "We don't care if you think that you are docile, just don't marry a Negro." It might be, then, that the ICL personality data reflected the *Ss*' actual feelings about themselves, whereas the BD data reflected attitudes toward others that they had been taught. This hypothesis suggests further research. It is testable with a procedure similar to that used by Jackson (5). He was interested in judged-item desirability and asked individuals to report how desirable they considered the items. By administering the questionnaire used here, once with instructions to judge the social desirability of the behavioral or personality item, and once with self-report instructions, the amount of shift of behavioral items could be compared to the amount of shift of the personality items. If this hypothesis is true, then the responses to the BD items should show less shift than the ICL items.

In conclusion, it has been shown that differences in personality, race, and grades of the stimuli did systematically influence behavioral intentions reported on the BD, but these behavioral intentions are not systematically related to the *Ss*' personality differences as measured by the ICL.

E. SUMMARY

It was hypothesized that persons who differ in their personality, as assessed by Leary's ICL, would differ systematically in their behavioral intentions toward persons described by certain personality characteristics, as well as by their race and grades. Ninety-seven *Ss* were tested with the ICL

and responded to a "Behavioral Differential." The BD required them to indicate their behavioral intentions toward persons who varied in race, personality, and degree of academic achievement. Previous factor analyses of the BD and ICL were replicated, and meaningful personality types were extracted from responses to the BD. However, no relationship was obtained between Ss' personality types as assessed by the BD and Ss' personality scores on the ICL. It was concluded that the two instruments tap different domains of responses.

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ETHNOCENTRISM AND THE FACE OF THE STRANGER*¹

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A. INTRODUCTION

Several studies in the field of ethnocentrism (2, 3) have utilized fictive groups to explore the generalization phenomenon. However, several questions—of whether the fictive group *exists* or *does not exist* for the subjective mind of the examiner, of what variables are related to and determine its mode of apperception and concrete representation, and of how all these are related to the attitude towards the fictive group—have not yet been examined. These questions have been examined here.

B. METHOD AND SAMPLE

A social distance scale (following the Bogardus principle) containing a fictive group by the name "Lagesi" and the F scale were administered to five different groups of subjects in Israel. Upon the completion of the questionnaire, they were requested (a) to describe a Lagesian person (b) to give introspective accounts of the processes generating that picture.

To determine whether direction of associations was influenced by the stimulus word Lagesi, another group was asked to describe a Yurasian person. It was also assumed that a possible set of an "ethnonational" frame of reference (*since the question followed a social distance scale*) *may have influenced the responses; hence an additional experimental variation was carried out with* another group of subjects who were asked to describe "a person named Lagesi."

The characteristics of the various participating groups were as follows: Group I—second-year university students in sociology ($N = 41$), Group II—third-year university students in psychology ($N = 32$), Group III—fourth-year high school kibbutz students ($N = 22$), Group IV—second-year students of a commercial high school ($N = 22$), Group V—a post-graduate course for nurses ($N = 34$), Group VI—third-year sociology stu-

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¹ The first stages of this research were undertaken in collaboration with Dr. G. R. Tamarin of the Tel-Aviv University.

dents ($N = 30$), Group VII—eighth-grade pupils of an urban area ($N = 31$).

Groups I through V were given the standard test, Group VI a "Yurasian person," and Group VII described the "person named Lagesi."

C. RESULTS

1. *Does a Fictive Group Exist Subjectively?*

The data suggest an inverse (though not linear) relationship between years of formal education and subjective belief in the existence of a fictive (or unknown) group: the more educated and worldly subjects tended to equate their lack of familiarity with the group with its nonexistence, or at least with a strong doubt concerning its existence; whereas the less educated accepted the possibility of its existence without their knowledge (9.7 per cent; 18.1 per cent; 26.0 per cent; zero per cent and 2.9 per cent of Groups I to V respectively stated unequivocally that the Lagesi group did not exist; 9.7 per cent; 24.2 per cent; 13.0 per cent; 4.5 per cent and 5.9 per cent of the respective samples openly doubted its existence). However, it is difficult to ascertain the exact extent of their subjective disbelief because of the indirect research method used in the study, and the fact that quite a few subjects (especially among the more educated and less authoritarian samples) rejected the task altogether.

2. *The Figure of the Stranger*

The content analysis of the actual descriptions (total $N = 72$) of the first stage of the experiment revealed that the stranger's figure was apprehended under the following categories: (a) Geographical locations: Africa = 25, Asia = 9, South American and the Pacific Islands = 5; (b) Ethnoracial belonging: Negroes = 16, Orientals = 4, others (Indians, Slavs) = 6; (c) Primitivity: $N = 42$; (d) Personally determined associations: $N = 4$; and (e) Humoristic: $N = 3$.

The descriptions of the figures were mostly stereotypes determined by the ethnic and geographical designations attributed to the figure.

The determinants of the associations leading to the specification of location and ethnicity as expressed by the subjects' introspections were (a) determination by similarity of names and clang-association ($N = 26$), such as names of groups, geographical places, and even personal names (e.g., Lagesi—Bengalesi, Portugesi; Lagesi—Ges, my friend from Tunis, a Tunisian community); and (b) determined perelimitation ($N = 12$): for example:

"since I have not heard about this nation, it must be a primitive tribe in some faraway place." This type of analysis occurred only in the first three groups.

3. *The Relationship of Ethnocentrism, Authoritarianism, and the Face of the Stranger*

No systematic relationships could be discerned between types of concretization of the figure, its absence, or the total rejection of the task, on the one hand, and ethnocentrism and authoritarianism, on the other. However, it was observed that the fictive group ranked among the three most rejected outgroups in each of the participating samples. Also, highly significant ($p > .001$) correlations were found between average ethnocentrism and degree of rejection of the fictive group ($r = .87$; $r = .69$; $r = .92$; $r = .78$; and $r = .94$ for each of the respective samples). The relationship of authoritarianism and degree of rejection of the Lagesi outgroup was less systematic though still significant ($p > .05$) in three out of the five samples— $r = .53$; $r = .70$; $r = .45$ —except for samples II and IV.

4. *The Yurasian Figure and the Person Named Lagesi*

The content analysis of the responses to these stimuli revealed that most subjects, even without a predisposing set, tended to concretize unknown persons in terms of geographical habitat (66 per cent-80 per cent) and ethnicity (31 per cent-22 per cent). For example, the personal descriptions of the person named Lagesi depicted stereotypical images of the jungle, Indian, and primitive man, and referred mainly to his (a) physical characteristics (mostly tall, strong, and dark), (b) dress (skin, cloth, or naked), and (c) outward behavior and mode of eating (savage, carnivorous, grass eaters).

D. DISCUSSION

The apperception of unknown groups or persons is an unstructured task. The psychological situation confronting the subject can be compared, theoretically, to the Rorschach test, on the one hand, and to the autokinetic one, on the other hand. The subject can respond in either of three ways:

a. Reject the task completely, which may be equivalent in some respects to a rejection of a Rorschach card, stemming from blocking as a result of an anxiety-arousing situation. Or, as in this particular task, it may also be a sign of rejecting an absurd demand by a rational person, not inclined to fantasy or to "as if" situations, and perhaps also with a touch of negativism-opposition. These two activating factors appeared in the present study: the more highly educated and less authoritarian manifested the second type of motiva-

tion and the less educated yet intellectually ambitious and more authoritarian (the nurses) manifested the first type of reaction. It may well be that for the more educated the task was not anxiety-arousing, since they equated lack of knowledge with the nonexistence of the group.

b. Respond to the task by structuring the situation according to individual needs. This was quite rare in the first five groups and is undoubtedly connected with the "set" imposed on the subjects by the context of the experiment. It appeared most often in Group VII in which there was no "national" set.

c. Respond to the task by finding an "anchorage" point from which to depart. The anchorage point for describing unknown figures, as demonstrated in this experiment, is most often nationality, ethnicity, and geographical habitat. The processes leading to the selection of the specific form of concretization may be conscious or unconscious and are determined by cognitive "per-elimination" analysis or by clang-associations. Once the geographical habitat or ethnoracial characteristics of the figure had been defined and delimited the stereotypical image connected with it followed and the subject could fulfill the task.

The fact that the "fictive" group was ranked among the most rejected groups may be related to the way it was apprehended: "primitive" and "dark." However, another factor, that of the fear of the stranger, may have also played a role, especially in light of the fact that it is sometimes rejected even more than the "dark" Ghanaian group. Also, Group IV, which was the least educated and most authoritarian sample of the study, was also the most rejecting one. This seems to strengthen the hypothesis of the added effects of irrational fears on the rejection of the unknown group; thus one of the activating psychological elements of the authoritarian personality is, in fact, the belief in irrational forces (1).

E. SUMMARY

The purpose of the study was to explore whether a fictive group exists subjectively when presented as real, the factors determining its mode of perception, and its relationship to ethnocentrism and authoritarianism.

Five samples were given the F scale and a social-distance scale containing a fictive-Lagesi group. They were then requested to describe a Lagesi person and to give introspective accounts of the processes generating the description. One additional group was requested to describe a Yurasian person, and another (which was not given the preliminary scales) was asked just to describe a person named Lagesi.

The analysis of the responses revealed that (a) the subjective belief in the existence or nonexistence of a fictive (or unknown) group is related to years of formal education: that is, the more educated subjects tended to disbelieve in the existence of the fictive group; (b) the apperception of the figure of the stranger is mostly in terms of *primitivity*, *geographical* location, and *ethno-racial* belonging; (c) the direction of the association, as stated by the subjects, was determined in most cases either by clang-association or by a "per-elimination" process; (d) the Lagesi group was one of the most rejected outgroups; and (e) no relationship was found between individual mode of apperception of the fictive figure and either ethnocentrism or authoritarianism.

The results are discussed in terms of the unstructuredness of the task and the need for an anchorage point for the description. The possible influence of a "national set" in the first five samples is mentioned. Also, the possible influence on degree of rejection of a "color" and "primitivity" factor, as well as an irrational fear of the stranger, are discussed.

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THE INFLUENCE OF DEATH UPON HERO-IDENTIFICATION AMONG PSYCHIATRIC PATIENTS*

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Since his death in 1963 there has been considerable discussion of the growth of a "legend" around the life and personality of John F. Kennedy. Public opinion polls showed that approval of his performance as president climbed notably after the assassination (1), and workers with children saw marked changes in their attitudes: "There is no doubt that following the death of President Kennedy a strongly intensified idealization of him was widespread" (2, p. 203). The impression is strong that since his death he may have become more of an idol or hero than he was while alive; this study, therefore, investigates the influence of death upon psychiatric patients' use of the name John Kennedy as a hero-figure on a psychological test.

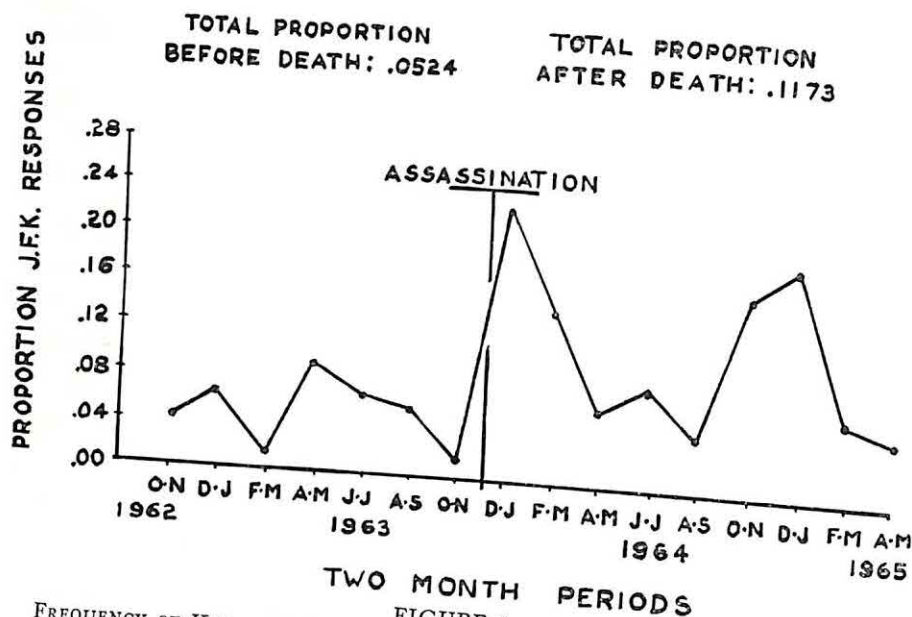
One of the pencil-and-paper tests included in the routine group-testing battery at North Dakota State Hospital is the Machover form of the Sentence-Completion Test. This version contains two items that are commonly considered by clinicians to reflect figures of identification: "My hero is _____," and "I would like to be like _____."

All Sentence-Completion Tests that had been taken from late in 1962 during Kennedy's presidency (when the Machover form first came into use) through June of 1965 were reviewed. It was thus possible to compare the frequency of usage of his name as an identification figure during 14 months in office and for 18 months following his death, a period of over two and a half years. Responses given by a total of 795 patients on the two sentences during that period were recorded along with each patient's age, sex, date of testing, *IQ* (when available), and psychologist's diagnosis. Since no major changes in hospital admission policy were made during that time, there is little or no reason to suspect that any response differences on the Sentence-Completion Test could be attributed to systematic differences in the patient samples before and after Kennedy's death.

Figure 1 shows the proportions of Kennedy responses to total Sentence-

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Completion Test responses for two-month periods before and after the assassination. Comparison of the number of Kennedy responses given during four-month periods makes it clear that his name was used more frequently after death than before ($\chi^2 = 20.31, p < .01$; some expected frequencies were too small to allow use of χ^2 for the two-month periods). The overall after-death proportion (.1173) in contrast with the overall before-death proportion (.0524) also emphasizes this change in response frequency ($\chi^2 = 10.98, p < .001$).



comic-strip characters. Being president and having a great deal of publicity do not alone make a hero, at least not as reflected in the test responses reviewed for this study.

Kennedy's name was more often used to complete the "hero" sentence than the "like to be like" sentence (78 per cent of the Kennedy responses occurred on the "hero" sentence). This fits the general finding that the "hero" sentence seemed to be completed with more distant figures of identification (e.g., presidents, movie stars), while the "like to be like" sentence shows responses of better known, less public figures (e.g., relatives).

The importance of the Kennedy name as a response to these test items is emphasized by the fact that when the responses of all 795 people were categorized into 29 response-categories, Kennedy's name alone ranks ninth in frequency, while no other specific person would have ranged above 23rd (Lincoln, with 17 responses). It should be noted that the increase in proportion of Kennedy responses, though significant, is actually only around six per cent. Still, in relative terms the observed after-death proportion of Kennedy responses is at such a high level as to be exceeded by no other type of response, including the most popular overall categories of "Idealized Others" (e.g., a good person), "Father," "Nobody," and "Entertainers-Prizefighters-Ballplayers" (another paper is in preparation concerning the general findings for all 29 response categories).

Ten of the 66 Kennedy respondents on the Sentence-Completion Test had also taken the WAIS; their average *IQ* of 103.10 is significantly higher ($p < .01$) than the 91.16 average for all the test-taking subjects who took the WAIS (approximately 14 per cent of the total test-taking group). No age, sex, or diagnostic differences were found for the Kennedy respondents as compared to the total group.

Keeping in mind the fact that these findings came from a group of mental patients rather than "normals," we can at least speculate that there is something unique in the meaning of the Kennedy name to the American people and that his death has significantly influenced that meaning.

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THE MORAL JUDGMENT OF POSITIVE ACTS*¹

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A. INTRODUCTION

Most studies in the area of morality concentrate on its negative aspects. Although the concepts of temptation, transgression, and guilt play a central role in both the theoretical and the empirical approach to morality, such concepts as "good will," "altruism," and "clean conscience" would appear to deserve increased attention. The degree to which moral behavior is learned and controlled exclusively by punishment is an open question; and positive reinforcement of "good" behavior may, indeed, be of major importance. This makes it all the more difficult to understand why this positive aspect of morality has been neglected. In the relatively restricted area of moral judgment, in spite of the substantial amount of research stimulated by Piaget's now classical study (4), all of the work is based on the evaluation of transgressions. Even though in some of the stories originally used by Piaget there is an element of positive intention, the final action to be judged is always undesirable (e.g., the inkblot story, the scissors story, or the cup story). The question may be raised as to what degree some of the principles of moral judgment discovered in the area of transgressions apply to the judgment of positive acts? What are the central dimensions of such judgments, and how do they correspond to the developmental stages postulated on the basis of data available from the negative component of moral judgment? All these problems call for extensive research which is beyond the scope of the present paper. The two miniature studies to be reported deal with an initial attempt to test the application of two central dimensions, that of intentionality and of material results, as criteria in the moral judgment of positive acts. Influenced by Piaget many authors documented the centrality of these two concepts with a major developmental trend toward the increasing importance of intentions over material results (1, 3). Although this maturational aspect is of central importance, the preliminary studies to be reported here are not developmental ones, and their main purpose was to test *whether in judging positive acts intentionality and results would serve as consistent criteria.*

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¹ The authors wish to thank Miss M. Lindenstrauss for assistance in data analysis.

B. STUDY 1

1. *Subjects and Method*

A group of 59 first-year psychology students was presented with four items describing a child who found money on the street and returned all of it to the police. The items were specifically designed so as to include two levels of positive intentionality (i.e., returning the money spontaneously or returning it after being questioned about it), and two levels of positive material results: i.e., returning one Israeli Pound (I£) or 1000 I£. All the possible combinations thus produced the four items. The subjects were required to distribute 100 "good points" among the four children.

2. *Results*

A sign test was computed in order to test for the possible significance of discrimination between the two levels of intentionality. Fifty-six Ss judged the higher positive intention as deserving more "good points," with only three Ss judging in the opposite direction ($p < .001$). Thus, intentionality appears to have been a consistent criterion in the moral judgment of positive acts.

A parallel analysis for results, however, showed that two opposing principles seemed to have been operating within the sample tested. Thirty-six Ss attributed greater morality to the act of returning the minimal sum of money, 14 to the higher sum, with only nine Ss who did not differentiate between the two. The first tendency which the sign test showed to be significantly more frequent ($p < .01$) was a completely unexpected finding, since the simple transformation of the principle of results as it was formulated within the content of negative acts implied that the greater the positive outcome, the greater the moral value of the act.

A third test was made in order to determine to what degree the discrimination between intentions was greater than that between results *independently of the particular principle of results chosen by the individual*. A sign test showed that 56 out of the 59 Ss showed more discrimination between the two intentions than between the two results ($p < .001$).

The results of the first study imply, then, that to a great extent intentionality, and to a lesser extent results served as criteria in the moral judgment of positive acts. The unexpected finding was that the majority of Ss judged the act that resulted in smaller material good of greater moral value. In order to analyze this finding in a more systematic manner, an additional study was conducted.

C. STUDY 2

How are results evaluated? Are the two above-mentioned types of responses merely chance variations due to lack of any consistent principle, or are they basically different psychological arguments? Study 2 attempts to clarify this problem by a systematic experimental design. If one assumes that two distinct principles of results do exist, what might their underlying psychological rationale be? The judgment of the act of returning the larger sum of money as more moral ($R+$) seems to follow the commonsense notion of "quantity" of goodness, which is symmetrically related to "quantity" of damage, or in Piaget's terms "moral realism." It is conceivable that in the same manner as both the probability of punishment and its intensity are at least partially correlated to the amount of damage resulting from a negative act, the probability and intensity of praise are related to the amount of positive outcome. Such correlated reinforcement may account for this straightforward translation of the principle of results. What explanation can be given the fact that the majority of Ss consistently regarded the return of the smaller amount of money as the better of the two ($R-$)? In attempting to understand this apparently opposite principle, two nonexclusive arguments may be forwarded: (a) the principle of "much ado about nothing": i.e., the assumption that more "good will" was necessary to return the minimal sum of money, which in any case nobody would bother to reclaim and for which little if any reward would be expected; and (b) resistance to greater temptation. Retaining the amount of one I£ is practically a "perfect crime," hence the temptation to do so may be regarded as much stronger. Resistance to stronger temptation was judged of greater moral value. Both arguments (a) and (b) are more closely related to the fact that one I£ is of absolute low value, rather than being relatively less than the sum 1000 I£; whereas the principle of "moral realism" appeared to be based on the relative amount of "good" consequences.

1. *Method and Subjects*

On the basis of these assumptions the following design was used. In one of the groups in Study 2 the same four items were given to 82 undergraduate students, with the only difference that the lower result was changed from one I£ to 10 I£. In a second group the lower result was changed to 100 I£ and a different third sample of 91 Ss was tested.

Since the principle of moral realism ($R+$) is diametrically opposed to the judgment of the small result as more moral ($R-$), the single resultant should

reflect the dominant response tendency in the individual. The present design manipulated the probability of obtaining one of the two principles. The choice of (R—) as a principle is based on the absolute low material value of the positive act. Therefore, there should be a *negative* correlation between the probability of this principle being applied, and the absolute material value of the lower result. Even though 100 I£ is much lower than 1000 I£, in judging the act of returning the sum it would be difficult to apply both aspects of "much ado about nothing," and resistance to temptation, since this sum is of substantial value. It would thus be expected that comparisons of 10:1000 and 100:1000 would systematically reduce the probability of the application of R— and therefore the probability of the application of R+ would become increasingly greater. Another independent hypothesis would be that the probability of lack of discrimination (R=) would be negatively related to the contrast of the two results to be judged.

2. Results

Although the item change was not designed to affect the discrimination of intentionality, it appeared desirable to investigate such a possible outcome. The sign test applied to both groups indicates the same direction of intentionality discrimination as in Study one at the .001 level.

Figure 1 presents the percentages of Ss who chose (R+), (R—), or (R=) as their criterion in evaluating the results, in the three different groups.

As can be seen the two hypotheses were confirmed. The chances of (R—) responses were substantially reduced by making the lower material result of greater absolute value. Both (R+) and (R=) responses rose in probability. The closer the two results were to each other, the more difficult the discrimination between them became.

D. DISCUSSION

It would appear that the intentions-results dimensions served as consistent criteria in the judgment of positive acts, as well as crimes. As may be expected from the developmental literature, more weight was given to the inferred intentions than to the actual results in the college sample. It should be stressed, however, that the results as such were an important influence in the decision making.² Analysis of the data actually indicated that the results exerted

² Most studies following Piaget continued to view intentionality and results as mutually exclusive. Introducing a methodology which does not require the choice of one as opposed to the other exhibits the fact that both operate jointly. The same has been found with judgment of crimes (2).

influence in at least two different ways. The amount of material outcome may serve as a simple and straightforward index of the degree of good in a particular act. This would be a direct extension of Piaget's concept of moral realism. The nature of the results may also serve as the basis for inference

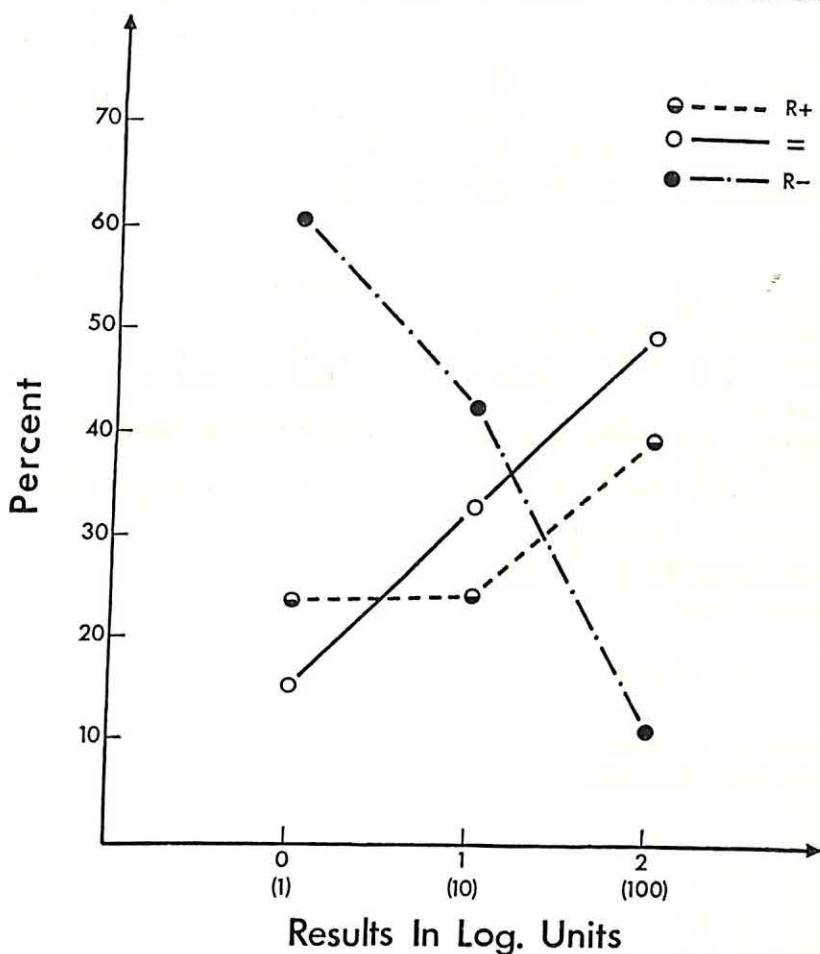


FIGURE 1

THE JUDGMENT OF RESULTS IN THREE EXPERIMENTAL GROUPS

concerning the actors or intentions quite apart from the specific information directly related to intentionality.

It appeared difficult to account for the importance given to the return of a single I£ in Study one without assuming some such process.

While some effort was made to manipulate the probability of the operation

of R—, it is not possible to specify clearly the underlying processes. In the chronologically last study which used a comparison of 10 and 1000 I£, a preliminary attempt was made to obtain data concerning the rationale behind the subjects' judgments. These data do suggest that at least two types of considerations were involved. In judging the return of a small sum of greater moral value, the subject may have stressed either some positive aspect, such as the need for real good will to bother with such a sum, or the absence of some negative aspect, such as greater resistance to temptation due to little if any risk of being apprehended. Further research will be needed to clarify the complex of processes involved in such simple appearing tasks.

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ANTICIPATED AND EXPERIENCED STRESS IN SENSORY DEPRIVATION AS A FUNCTION OF ORIENTATION AND ORDINAL POSITION* 1

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A. INTRODUCTION

It has been reported that firstborns made up about four-fifths of the volunteer Ss for a sensory deprivation (SD) experiment (7), just as they did for a social interaction experiment (2). This finding appears to be inconsistent with hypotheses that (a) firstborns find isolation particularly stressful when they are anxious and, (b) SD is usually perceived as an anxiety arousing experience; therefore, (c) SD is especially unpleasant for firstborn Ss. A recent paper (3) supported the noxiousness hypothesis: firstborns in an SD experiment whose Ss were presumably made anxious by the experimenter's instructions reported significantly more symptoms of psychological distress than did later borns. This finding was interpreted as confirming the hypothesis that the isolation situation was in fact more stressful for anxious firstborn Ss than for anxious later born Ss. Furthermore, the proportion of first to later born volunteers for the study was seven to nine; thus the previously found predominance of the former was reversed and firstborns apparently shunned the experiment because of the anxiety-arousing recruiting material (4).

The question arises whether SD itself is really differentially stressful, or whether first and later born Ss, given the same preconfinement orientation, respond with different expectations of anxiety. If expectation—i.e., susceptibility to instructional set—is found to differ with ordinal position, this would be sufficient to explain the findings on volunteering behavior and on the reaction to SD: firstborns may "believe" the orientation to a greater degree and thus may volunteer when the orientation is reassuring but refrain when the orientation is frightening; similarly, those firstborns who do volunteer may expect either less or more stress than later borns, depending on the orientation. Such a difference in anticipated stress is likely to affect the results. First, ordinal position is associated with behavioral differences, so that experiments whose sub-

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ject populations are widely divergent in this respect are not strictly comparable (6). Second, there is considerable evidence that *Ss*' hypotheses about the nature of the experiment influence their reactions in that experiment; such evidence exists in a variety of contexts, including SD (9).

The current study was concerned with differences in anticipated and experienced SD stress on the part of first and later born *Ss*. Two orientation conditions were used, one in which the information provided was affectively neutral (essentially a control condition) and one in which it was reassuring. The paper already cited (3) has provided evidence concerning the effects of anxiety-arousing orientation on reported SD stress.

B. METHOD

The instrument used to measure anticipated and experienced stress was the Subjective Stress Scale (SSS), a Thurstone scale in which the *S* chooses the item best describing how he feels at a specified time or in a specified situation. The end points of the scale are "Wonderful" (00) and "Scared stiff" (94), with intermediate items, such as "Comfortable" (17), "Indifferent" (48), and "Unsafe" (76). This instrument has been found to identify subjective stress differences both reliably and validly in a number of situations (1), including SD (5, 8), and has become a standard stress index in SD studies. In the current experiments *Ss* were told to mark the item which best described the emotion they expected to feel during the experimental session (anticipation rating) and the emotion they had felt during it (retrospective rating).

To establish whether anticipated SD anxiety differed by birth order when minimal orientation was available, the SSS was administered to 40 volunteers whose only orientation had been a poster which read: "Male undergraduates are needed as subjects to spend 24 hours in a dark, soundproof chamber. Payment \$20." The SSS was given as soon as the *Ss* reported to the laboratory. All *Ss* were then used as controls in another study, so that no post-SD (retrospective) ratings are available for them. Of these 40 *Ss*, 25 were firstborns.

For the reassuring orientation condition, birth order data were collected from male college students who volunteered for various SD experiments in an ongoing research program. The original contact was made through advertisements in the university newspaper and a poster, which read: "Earn \$20. Male undergraduates needed for experiment involving 24 hours in a dark, quiet room. No unpleasant stimulation of any sort is used." When a potential *S* responded he was oriented as follows, either orally or via a dittoed instruction sheet:

Having volunteered to be a subject in the reduced stimulation experiments now being conducted at Rutgers, you should know the general purpose and procedures of the research.

Generally, our interest is in the effects of monotony on various kinds of behavior, such as problem solving, thinking, etc.

The monotonous situation consists of a dark, silent chamber, where you are to lie on a bed for periods up to 24 hours depending on the particular experiment in which you are participating. Food, water, and toilet facilities will be available to you at all times. . . . You will *not* receive unpleasant or painful stimulation of any kind whatsoever. The vast majority of our past subjects have found the experience to be completely without stress, although somewhat boring; some subjects in fact have found it to be quite pleasant and restful. However, should you desire to quit the room, you may do so at any time.

The experimental session usually occurred 1 to 2 weeks after the orientation. The statement quoted above was repeated and then, just prior to being confined, each *S* was given a copy of the SSS.

Experimental *Ss* spent 24 hours in a dark, soundproof chamber, lying quietly on a bed, with vanilla-flavored Metrecal and water available at bedside. At the end of 24 hours, oral tests lasting up to 15 minutes were administered over the intercom; then the *E* entered the room with a flashlight, waited until the vision of the *S* was adapted, and asked the *S* to mark on another SSS how he had actually felt while in the chamber during the previous 24 hours.

Data were collected from a total of 45 *Ss* participating in SD studies conducted during 1965-1967. Of these *Ss*, 32 actually underwent the SD treatment while the others, randomly chosen, were used as controls. Twenty-six of the 45 *Ss* were firstborns, 16 of whom underwent SD.

C. RESULTS

Table 1 presents the anticipated and experienced SD stress reported by our *Ss*. The control (minimal orientation) condition showed no ordinal position effects; with the reassuring orientation, firstborns responded by anticipating considerably less unpleasantness than later borns. While the retrospective ratings were about the same, the originally more negative anticipation of the later borns resulted in a significant pre- to postconfinement decrease in reported stress; actually, both groups reported about the same degree of subjective stress while in SD.

One other noteworthy finding is the relative lack of anxiety with which both first and later born volunteers approached SD when minimal orientation was provided; the mean ratings were close to the scale value of "Indifferent."

D. DISCUSSION

With minimal orientation, first and later borns did not differ in the degree of SD stress anticipated. With reassuring instructions, however, the firstborn

Ss exhibited considerably greater susceptibility and anticipated much less unpleasantness than did later borns, although the degree of stress experienced, rated retroactively, was about the same.

Thus, to explanations based on the idea that anxiety plus isolation is particularly unpleasant for first borns, we must add differential responsiveness to instructional set. Although the study using anxiety-arousing orientations (3, 4) did not measure anticipated stress, the fact that only a minority of the volunteers was firstborn indicates that oldest children did in fact anticipate stress; in contrast, firstborns were in the majority when orientations were minimal or reassuring (7, and the present study).

TABLE 1
MEAN ANTICIPATED AND RETROSPECTIVE SSS RATINGS AS A FUNCTION
OF ORIENTATION AND ORDINAL POSITION

Rating	Firstborn	Later born	Difference
Minimal orientation anticipated rating	45.2	48.9	3.7
Reassuring orientation anticipated rating	36.3	53.2	16.9**
Retrospective rating	31.5	32.1	0.6
Pre-Post change	-4.8	-21.1	-16.3*

* $p < .05$, two-tailed.

** $p < .02$, two-tailed.

These findings shed light on the effects of ordinal position on volunteering behavior, and may explain some inconsistencies in the literature (6). Further, they may help to clarify the effects of instructional set on the behavior of SD subjects, a topic which has caused some furor among SD researchers who have reported contradictory results (9). It may be that birth order effects represent a mediating variable which influences the S's susceptibility to set, just as it interacts with set to mediate anticipated and experienced SD stress.

E. SUMMARY

With neutral instructions, first and later born Ss anticipated the same amount of stress during a sensory deprivation experiment; when instructions were reassuring, firstborn subjects anticipated less distress than later borns, and after release reported having experienced about the same amount. It is proposed that birth order and instructional set may be important mediators in determining both volunteering for and reactions to sensory deprivation among firstborns.

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CROSS-CULTURAL NOTES

Under this heading appear summaries of studies which, in 500 words or less, provide comparable data from two or more societies through the use of a standard measuring instrument; additional details concerning the results can be obtained by communicating directly with the investigator.

The Journal of Social Psychology, 1968, 76, 265-266.

SOCIAL CHANGE AND FIELD DEPENDENCE IN SOUTH AFRICA*

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The hypothesis tested is that Ss who are more field independent, as measured by the rod-and-frame test (RFT), are more capable of adjusting to social change.

Coping with change was assessed by three criteria. (a) Level of education may directly affect performance on the RFT because schoolchildren gain experience in puzzling at strange tasks, which the unschooled lack. It may also be related to RFT accuracy because the children of ambitious and independent parents are more likely to stay at school and become ambitious and independent themselves than are the children of parents unable to meet changing circumstances. (b) An ability to speak English or Afrikaans indicates an ability to participate in the commercial and industrial life of the towns. (c) Experience of travel outside the rural area reflects the fact that those who are ambitious and energetic travel outside their district to rise in the world. To qualify, Ss had to have travelled to a town larger than the villages in the immediate neighborhood.

By setting up the rod-and-frame apparatus outside a trading store in the village of Tsomo and offering five cents to anyone who could adjust the rod to the exact vertical, the author obtained 38 Ss. A further 24 Ss were persuaded in the same way at Lumku Missiological Institute, making a total of 62. The age range was from 12 to 22 years and the education range was from zero years of schooling to nearly 12 years. The median age was 17 and the median

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level of education was 7 years of schooling. There were 38 males and 24 females, all rural Xhosa.

A portable version of the RFT, described by Morris¹ was used. Each S adjusted the rod eight times after having the task explained to him in Xhosa.

The RFT performance of 25 high school students was not significantly better than that of primary school students ($t = .88$). The high school group at a median age of 17 years differed very little in age from the primary school group at a median of 18.4 years. It is safe to conclude that education was not an important factor in the scores of the students tested.

Since only five of the sample were able to speak Afrikaans or English, no useful comparisons could be drawn with the use of this criterion.

By far the most significant factor was travel outside the rural area in which Ss were tested. Those 30 Ss who had travelled were more accurate than those 32 who had not ($t = 3.9$; $p < .01$). The groups are equivalent with regard to both age and education. At first sight it may seem paradoxical that travel should have such a large effect on RFT performance, but the paradox disappears if we regard the relation as a reflection of a joint underlying cause: psychological aggressiveness and ability to cope with large-scale social changes. Those who wish to raise themselves above the level of narrow poverty must go to the towns and the cities to work.

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¹ Morris, J. B. The rod-and-frame box: A portable version of the rod-and-frame test. *Percept. & Motor Skills*, 1967, **25**, 152.

STEREOTYPED ATTITUDES TOWARD THE AGED IN WEST GERMANY AND THE UNITED STATES*

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Studies of attitudes toward the aged indicate that young people in the United States have a very negative and pessimistic outlook concerning old age, while older Americans tend to emphasize the positive or ambivalent elements in the lives of the elderly. Recent investigations have compared this discrepancy in attitudes between generations with a majority-minority conflict.^{1, 2} It has also been noted that the attitudes of old and young toward aging are interrelated and that cultural rejection results in self-rejection of the old, with its concomitants of personality disorganization and regression.

The present research was carried out to determine if there are parallel differences and similarities in attitudes across generations in West Germany.³ Although respect for the elderly has been traditionally high in Germany, a steady decline in patriarchal sentiments beginning in the postwar years suggests that the actual relations between old and young in West Germany may be far more disharmonious and similar to those in the United States^{4, 5} than has generally been acknowledged.⁶

Agreements and disagreements in the attitudes toward old people were assessed with a German translation of the Golde-Kogan Sentence Completion Procedure. This instrument, consisting of 20 incomplete sentences dealing with various aspects of old people's lives and the S's personal experience with elderly

* Received in the Editorial Office, Provincetown, Massachusetts, on June 6, 1968, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1968, by The Journal Press.

¹ Barron, M. Minority group characteristics of the aged in American Society. *J. Geront.*, 1953, 8, 477-482.

² Birren, J. E. The psychology of the aging. Englewood Cliffs, N.J.: Prentice-Hall, 1964.

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⁶ Thomae, H. Psychische und soziale Aspekte des Alterns. *Z. f. Geront.*, 1967, 1, 43-55.

persons, was administered to 67 older and 73 younger females of comparable intelligence and social background in three medium-sized West Germany cities. The answers of each *S* were classified by three independent native German judges according to a scoring schema adopted from previous research (see footnotes 4, 5). Agreement among the judges averaged 89 per cent for younger and 83 per cent for older *Ss*. Age differences for each test item and for the individual scoring categories were examined by means of chi square.

The major findings were (a) older and younger German women differed significantly in their attitudes about old age on 11 of 20 test items, and American women on 9 of the 20; (b) the German women differed significantly on 8 of the 9 items on which the Americans also differed; (c) young German and young American women agreed in ascribing highly negative personality characteristics to the aged on four of the nine items; and (d) young German women viewed their elders in a significantly more positive manner than their American counterparts on the remaining items which distinguished the two groups.

The present findings support the basic hypothesis that old and young German and American women agree and disagree generally to about the same extent in their views of old age and the aged. In both countries highly unrealistic beliefs about older persons are prevalent among younger women but, among the young women in Germany, positive stereotypes seem to balance the negative ones.

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THE ACHIEVEMENT MOTIVE IN TURKISH ADOLESCENTS*

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This study was inspired by the research of McClelland^{1, 2} and Bradburn³ on Turkish adults, whose need to achieve was found to be lower than that of an American group. McClelland and Bradburn explained this finding in terms of the restrictive influences of the authoritarian Turkish father on his son's motivation to reach a standard of excellence.

The objectives of the present study were to investigate the level and to examine the nature of the achievement motive in Turkish late-adolescents, and to look over those factors that McClelland considers to be related to the development of the motive.

Two hundred and eighty-two subjects between the ages of 18 and 22 were asked to give written stories for four TAT cards recommended by McClelland. The stories were scored by three independent judges, and final scores were reached after consensus.

The mean need Achievement of Turkish late-adolescents was found to be 2.94 ($SD = 4.34$),⁴ close to the values obtained by Bradburn for the adult population. A study of the content of the stories revealed that the subjects were more concerned than the American group over the means for reaching their goals and the obstacles on their path to success. They also tended to be more motivated than the American group when faced with a threat of severe deprivation or when under the pressure of an external authority. The latter finding implies that the young Turk needs some kind of an external force to initiate in him the urge for achievement.

* Received in the Editorial Office, Provincetown, Massachusetts, on July 9, 1968, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1968, by The Journal Press.

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² McClelland, D. *The Achieving Society*. Princeton, N.J.: Van Nostrand, 1961.

³ Bradburn, N. M. Need achievement and father dominance in Turkey. *J. Abn. & Soc. Psychol.*, 1963, 67, 464-468.

⁴ Supplementary data in the form of four tables listing percentages of subcategories and mean need Achievement scores and standard deviations for father's profession, mother's profession, and applicant's lycee can be ordered as NAPS Document number 00078 from ASIS National Auxiliary Publications Service, c/o CCM Information Sciences, Inc., 22 West 34th Street, New York, New York 10001; remitting \$1.00 for microfiche or \$3.00 for photocopies.

In fact, the children of army officers (whose authoritarian discipline is well known), the youngest sibling in the family (who in the Turkish culture is dominated the most by his elders), and those students coming from schools with strict educational systems proved to have the highest Achievement scores. The absence of the restraining influences of the father, through death or separation of the child from the home via boarding school, was not related to the level of need achievement. Nor was there a relationship between the parent's conservatism, religious adherence, educational and socioeconomic background, and the Achievement scores. Being in a democratic educational environment did not promote the motive in the male late-adolescents, but definitely had a positive effect on the Turkish females.

These results can be explained in the light of the changing social values in Turkey, a country which is institutionally practicing a democratic spirit, but is culturally bound to its traditions.

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LANGUAGE MEDIUM AND RESPONSES TO THE SEMANTIC DIFFERENTIAL*

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One of the purposes of a study involving 393 Filipinos was to assess the effect of language medium on responses to the semantic differential. Three hundred twelve of the subjects were employees of the Office of the Presidential Assistant on Community Development (PACD); 194 were members of seven provincial field teams; and 118 were pre-entry trainees. The remaining 81 subjects were students at two Philippine universities.

Each subject was administered a questionnaire containing four parts: (a) a personal information section; (b) an English language semantic differential; (c) 56 items from the Dogmatism and Authoritarian Scales; and (d) a Tagalog language semantic differential.

The English semantic differential contained 12 concepts and eight bipolar scales. The Tagalog version contained six concepts and eight scales. Five of the concepts (myself, my work, change, rural life, and barrio people) and four of the scales (good-bad, kind-cruel, hard-soft, and fast-slow) were common to both versions. The order and position of polar adjectives were randomized for each version and the order of concepts randomized for each questionnaire.

Tagalog is the official Philippine national language. However, the medium of instruction beyond Grade 2 in the public schools and in all colleges except a few which teach in Spanish is still English. Filipinos raised in those areas which have indigenous dialects often do not command a reading knowledge of Tagalog. Thus, while all subjects completed the English semantic differential, only 253 completed both versions.

The sign test was applied to the responses of those completing both versions. It was hypothesized that no significant differences would occur between versions. Significance was set at the .05 level.

The hypothesis was rejected in four of the 20 cases (five concepts \times four scales). Two differences occurred on the strong-weak scale for the concepts "my work" and "change." Subjects viewed these concepts as relatively stronger

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in English than in Tagalog. The other two differences occurred on the fast-slow scale for the concepts "rural life" and "barrio people." Subjects viewed these concepts as relatively faster in English than in Tagalog. No differences were observed for any concepts on the good-bad and kind-cruel scales.

Controlling the data for occupational role, the author found that the responses of the student group contained no significant differences. Four differences occurred for the PACD group. Three of these were the same as noted above: "my work," "rural life," and "barrio people." The difference for the concept "change" disappeared and a new one appeared for the concept "barrio people" on the kind-cruel scale. Barrio people were viewed as relatively more cruel in English than in Tagalog. All four differences involved concepts with particular relevancy to the subject and content of community development as an occupation.

The findings suggest both the importance of occupational role in the determination of semantic judgments and the importance of language as a cultural mediator in judgments about particularly relevant concepts within a single occupation.

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ARTISTIC EXPRESSION AND SELF-DESCRIPTION WITH ARABS AND CANADIAN STUDENTS*

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Several studies^{1, 2, 3, 4} dealing with the topic of creativity have suggested that one of the factors characteristic of creative individuals is their preference for complexity in life. This preference for complexity may include such things as ideational concepts, interest in science and art, preference for different types of activity, etc.

The relationship between simplicity and complexity in personality is, in itself, a complex one. Welsh,⁵ while attempting to design a nonverbal diagnostic instrument which would assist in identifying or measuring such variables as Hysteria, Depression, Schizophrenia, and Paranoia, found that his subjects tended to express a general tendency either to like or dislike figures presented to them. Welsh's sample also included several artists and these, as a group, tended to express a liking for figures "... which were highly complex, asymmetrical, free hand rather than ruled, and rather restless and moving in their general effect."⁶ Barron following up the previous study found that preference for complexity was clearly associated with originality, artistic expression, and excellence of esthetic judgment.

In all of these studies, however, little attention had been given to whether or not a relationship existed between self-description of subjects and actual artistic endeavors (i.e., creative ability). Under the influence of Barron, the

* Received in the Editorial Office, Provincetown, Massachusetts, on July 31, 1968, and given special consideration in accordance with our policy for cross-cultural research. Copyright, 1968, by The Journal Press.

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² Barron, F. The disposition toward originality. *J. Abn. & Soc. Psychol.*, 1955, 51, 478-485.

³ Barron, F. The needs for order and for disorder as motives in creative activity. In C. W. Taylor, et al., *The Second (1957) Research Conference on Identification of Creative Scientific Talent*. Salt Lake City, Utah: Univ. Utah Press, 1958.

⁴ Hutchison, E. D. *How to Think Creatively*. New York: Abingdon-Cobesbury Press, 1949.

⁵ Welsh, G. S. A projective figure-preference test for diagnosis of psychopathology: 1. A preliminary investigation. In F. Barron, *Creativity and Psychological Health*. Princeton, N.J.: Van Nostrand, 1963.

⁶ Barron, F. *Creativity and Psychological Health*. Princeton, N.J.: Van Nostrand, 1963. P. 182.

specific hypothesis was stated as follows: "Individuals who describe themselves with adjectives which stress the extraordinary, the non-average, the primitive, and sensual, and who express a dislike for what is religious, traditional, emotionally controlled, etc. will show a greater degree of complexity in free hand drawings than will individuals who describe themselves as 'socially acceptable,' 'conservative,' 'serious,' etc."

In this study 96 Ss (Arabs $N = 48$: males 28, females 20; Canadians $N = 48$: males 28, females 20) were asked to complete a forced-choice (F-C) self-descriptive adjective checklist (the adjectives were similar to those on the Gough Adjective Check List,⁷ adapted by Barron and Lindgren⁸ and a modification of Buck's House-Tree-Person Test).⁹

Product moment correlation scores between the Barron F-C Scale and the Buck H-T-P Test were all significant at the .01 level of confidence, lending support to the hypothesis that Ss, either Arab or Canadian, who describe themselves with adjectives stressing the extraordinary, the nonaverage, the primitive, and the sensual also show a greater degree of complexity in free hand drawings, at least as measured by the H-T-P Test.

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⁷ Gough, H. G. The General Information Survey. Berkeley, Calif.: Inst. Personality Assessment & Res., Univ. California, 1954.

⁸ Lindgren, H. C. Forced choice personality questionnaire—Form C. Mimeographed; after Barron, F., *Creativity and Psychological Health*. Princeton, N.J.: Van Nostrand, 1963. P. 138.

⁹ Buck, J. N. The H-T-P Technique, a quantitative and qualitative scoring manual. *J. Clin. Psychol.*, 1948, 4, 397-405.

REPLICATIONS AND REFINEMENTS

Under this heading appear summaries of studies which, in 500 words or less, provide useful data substantiating, not substantiating, or refining what we think we know; additional details concerning the results can be obtained by communicating directly with the investigator or, when indicated, by requesting tabular material from the ASIS.

The Journal of Social Psychology, 1968, 76, 275-276.

COMPARATIVE ACCURACY OF CANADIANS' PERCEPTION OF COMPATRIOTS AND FOREIGNERS*

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The main objective of the present study was to determine whether judges would be able to perceive an interviewee from another ethnic group (Indian) with the same accuracy as they would if the interviewee belonged to their own ethnic group (Canadian), or whether stereotypes would have a greater hampering effect on the former than upon the latter. Accuracy of perception is defined here as the degree of correspondence between a subject's ratings of an interviewee when asked to rate him "as he would rate himself" and the interviewee's actual self-rating. It does not necessarily imply any validity in the interviewee's self-ratings.

The Ss for this study were 25 volunteer Canadian university students. The testing program consisted of two phases. During the first phase, two Canadians and two Indians (from India) were individually interviewed about their views concerning movies and books for approximately eight minutes. The Ss predicted each interviewee's self-rating, immediately after the interview was terminated, on 25 semantic differential scales. Each interviewee rated himself on the same scales. During the second phase the same 25 Ss rated the concepts "people from India" and "Canadians" on the same semantic differential scales.

The Ss predicted similar self-rating for the two Indian interviewees ($r = .84$), and also for the two Canadian interviewees ($r = .65$). Although the difference between these two correlations is not significant, there was a

* Received in the Editorial Office, Provincetown, Massachusetts, on June 5, 1968. Copyright, 1968, by The Journal Press.

tendency for the *Ss* to ascribe more similar self-ratings to the Indian than to the Canadian interviewees. The correlations between the profiles for "people from India" and the predicted self-rating profiles for both Indian interviewees were exactly the same ($r = .73$ and $r = .73$). However, when predicting the self-ratings of the two Canadian interviewees, the first interviewee was considered as one who would rate himself more like the Canadian stereotype of Canadians ($r = .79$) than would the second Canadian interviewee ($r = .46$). The difference between these two correlations is significant ($p = < .01$), suggesting that when predicting the self-ratings of Canadians the *Ss* were able, in some instances, to overcome their stereotypes, while this flexibility was not characteristic of their predictions of the Indians' self-ratings. Neither the two Indians nor the two Canadians perceived themselves as similar to each other ($r = .21$ and $.29$, respectively).

A major finding in the present study was that the *Ss* were generally more accurate in predicting how the Canadian interviewees would rate themselves than how the Indian interviewees would. Of the 25 scales, significantly greater accuracy for the Canadian interviewees was obtained on 14 scales, while the Indian interviewees were rated significantly more accurately on only two of the scales. In the light of the previous data, the results can be interpreted to mean that the Canadian *Ss* were not hampered as much by their stereotypes in the prediction of the Canadian interviewees' self-ratings as they were in the prediction of the self-ratings of the Indian interviewees.

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DEMOGRAPHIC FACTORS IN THE COMMUNICATION OF PROMISES*¹

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Gahagan and Tedeschi² varied the credibility of promises (C) and strategy of the "other" (T) in a Prisoner's Dilemma Game (PDG). Following every 10th trial, E sent a message of intention to cooperate on the next trial, which E did three, six, or nine times, establishing 30 per cent, 60 per cent, or 90 per cent credibility levels. The 72 Ss played against a preplanned unpatterned 50 per cent or 75 per cent cooperative strategy for 110 trials. Because Ss were taken from both a four-year private institution, the University of Miami (UM), and a public junior college, Miami-Dade Junior College (MDJC), further statistical analyses evaluating the effects of Ss' school affiliation (SA) and sex (S) were undertaken.

Multivariate analyses of variance were performed with the use of the following as dependent variables: the proportion of cooperative strategy selections over the 110 iterations (CP1), Ss' cooperative proportion on the trial after promises (CP2), Ss' frequency of reciprocating promises (FR1), and the two-trial stochastic variables which Rapoport has intuitively labeled trustworthiness, forgiveness, repentance, and trust.³

Males demonstrated more trustworthiness than females ($F = 4.33$; $p < .05$). A significant $S \times C$ interaction was found on CP2 ($F = 3.36$; $p < .05$). Multiple t tests indicated males cooperated more on the trial after promises in the 90 per cent ($t = 2.60$; $p < .01$) and 60 per cent ($t = 4.48$; $p < .001$) conditions; while females cooperated more in the 30 per cent ($t = 6.69$; $p < .001$) condition. No differences were found on the $T \times S$ interaction.

Analyses with SA as the independent variable yielded differences on trust ($F = 4.53$; $p < .05$), CP2 ($F = 3.97$; $p < .05$) and FR1 ($F = 5.34$; $p < .05$). UM Ss were more likely to reciprocate promises and cooperate on the following trial, while MDJC Ss displayed more trust. Differences in

* Received in the Editorial Office, Provincetown, Massachusetts, on June 7, 1968. Copyright, 1968, by The Journal Press.

¹ The authors wish to thank Mr. Daniel Aranoff for his help in analyzing the data.

² Gahagan, J. P., & Tedeschi, J. T. Strategy and the credibility of promises in the Prisoner's Dilemma Game. *J. Conflict Resolut.*, 1968, 12, 224-234.

³ Rapoport, A. *Strategy and Conscience*. New York: Harper & Row, 1964.

trustworthiness ($F = 4.14$; $p < .05$) were found on the $C \times SA$ interaction. UM Ss displayed more trustworthiness in the 90 per cent ($t = 5.26$; $p < .001$) condition, but MDJC Ss displayed more in the 60 per cent ($t = 3.72$; $p < .005$) and 30 per cent ($t = 6.07$; $p < .001$) conditions. The $T \times SA$ interaction yielded no significant differences.

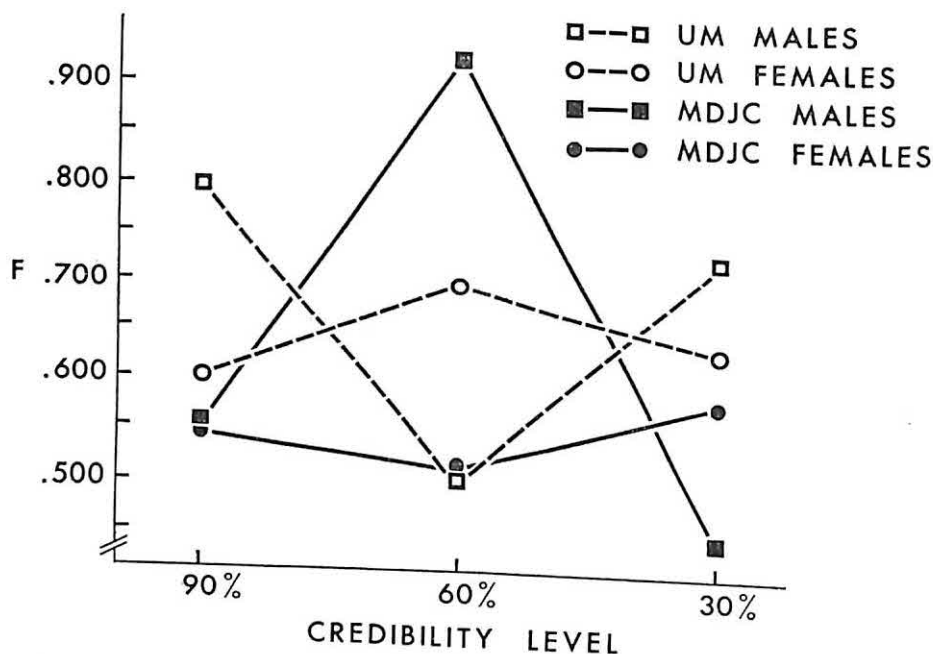


FIGURE 1
THE $C \times SA \times S$ INTERACTION ON FORGIVENESS

The $SA \times S$ interaction reached significance on trust ($F = 5.37$; $p < .05$). MDJC females showed more trust than MDJC males ($t = 4.32$; $p < .001$), while there was no difference between UM sexes ($t = 1.60$; $p > .10$).

The $C \times SA \times S$ interaction yielded differences on forgiveness ($F = 3.19$; $p < .05$) and FR1 ($F = 3.10$; $p < .05$). Figure 1 and Figure 2 illustrate these interactions. The $T \times C \times S$ interaction reached significance on trustworthiness ($F = 3.28$; $p < .05$) with most of the variance accounted for by the high trustworthiness of males in the 30 per cent credibility-50 per cent strategy condition. No other interaction effects were found.

The sex differences on the PDG variables replicate those found by Rapoport and Chammah.⁴ Two aspects of the data are of further interest: (a)

⁴ Rapoport, A., & Chammah, A. M. Sex differences in factors contributing to the level of cooperation in the Prisoner's Dilemma Game. *J. Personal. & Soc. Psychol.*, 1965, 2, 831-838.

Females cooperated more often than males on the trial that followed messages when the promise was of low credibility, while the males exploited the "other." Females are more prone to the "gambler's fallacy" or perhaps are more likely to respond optimistically to a "hard time" from another than are males. (b) The emphasis on verbal persuasion in child-rearing practices

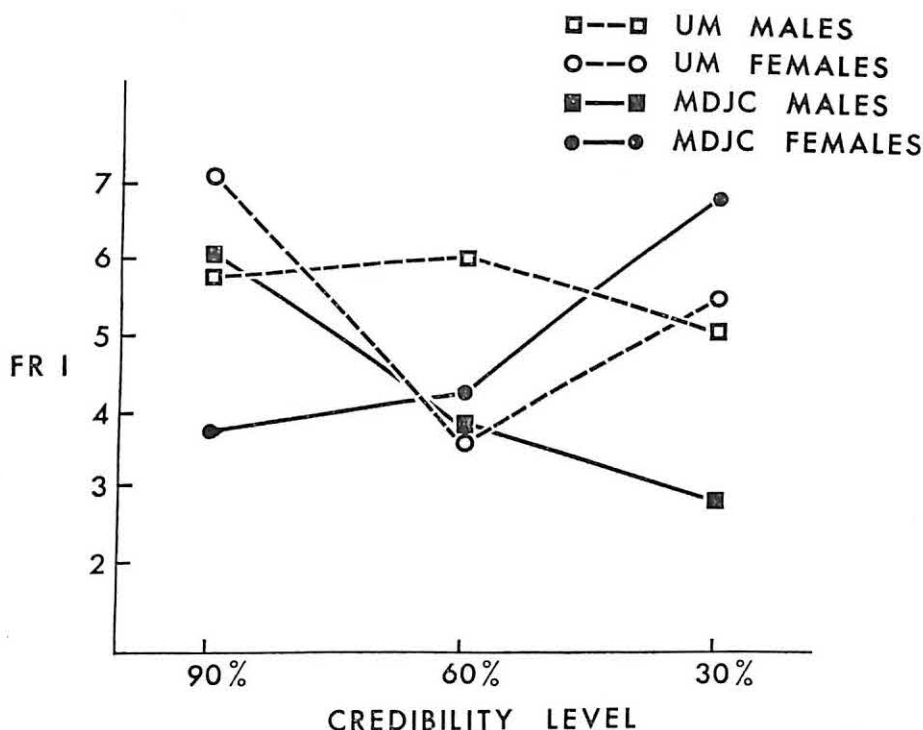


FIGURE 2
THE $C \times SA \times S$ INTERACTION ON FR1

of professional families, as compared to the emphasis on behavioral punishment among working-class families, may account for the differences found between the two populations.^{5, 6} UM Ss, from predominantly professional families, are influenced more by the verbal communications, as is shown by their more frequent reciprocation of promises and cooperation following the message. The stochastic outcomes indicate MDJC Ss, from predominantly

⁵ Sears, R. R., Maccoby, E. E., & Levin, H. *Patterns of Child Rearing*. Evanston, Ill.: Row, Peterson, 1957.

⁶ Comparisons between UM and MDJC students indicate that there are no differences in intelligence between the populations.

working-class families, seem to be influenced more by strategy selections on nonmessage trials.

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DOMINANCE-DEFERENCE PATTERNING IN THAI STUDENTS*

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Social relationships in Asian societies are often viewed as regulated by traditional dominance-deference patterns based on differences between generations, age, class, position, and sex. Gardiner¹ in a study of Thai attitudes toward future marriage roles found males high on dominance and females high on equalitarianism. Results of a recent cross-cultural study of dominance-deference² in which comparisons were made between Thai, Caucasian-American, Japanese-American, and Motherland-Japanese students indicated that, while westernization has still not had a strong impact on Thai culture, it is the Thai who more nearly approximate the dominance-deference scores of the Caucasian-Americans and that Thai males are significantly more dominant than Japanese-American males. The present study represents a continuation of this research.

A Thai translation of a dominance-deference scale developed by Arkoff *et al.*,³ consisting of the 10 dominance and 10 deference items originally devised by Murray,⁴ was administered to 199 students (46 males, 153 females) enrolled in introductory psychology courses at Chulalongkorn University. Each subject was instructed to select 10 of the 20 items which described himself; the score was the number of dominance items chosen, representing a range from zero (high deference) to 10 (high dominance).

The mean for males is 4.5 ± 1.85 and for females 4.1 ± 1.54 . No significant differences were found between the groups on the overall scale ($t = 1.33$, $df = 197$, $p = \text{n.s.}$), both showing low dominance and high deference. However, when responses to the two types of items are separated and ranked

* Received in the Editorial Office, Provincetown, Massachusetts, on June 15, 1968. Copyright, 1968, by The Journal Press.

¹ Gardiner, H. W. Attitudes of Thai students toward marriage roles. *J. Soc. Psychol.*, 1968, 75, 61-65.

² ———. Dominance-deference: A cross-cultural comparison. *J. Soc. Psychol.*, 1968, 75, 287-288.

³ Arkoff, A., Meredith, G., & Iwahara, S. Dominance-deference patterning in Motherland-Japanese, Japanese-American, and Caucasian-American students. *J. Soc. Psychol.*, 1962, 58, 61-66.

⁴ Murray, H. A., *et al.* Explorations in Personality. New York: Oxford Univ. Press, 1938.

according to the number of subjects selecting each, strong agreement is found for deference items but not for dominance items. There was an almost identical ordering by both sexes of the 10 deference items. Stressed in this pattern is the giving of respect and praise to others, suppression of one's own desires and initiative combined with dependence upon another's suggestions or advice, and an uncritical view of those in positions of authority. The complex psychological dynamics operating within the scope of this dichotomy become increasingly apparent when the dissimilarity in dominance patterning is considered. Whereas males indicate a desire to lead and persuade others, argue for their viewpoint, and feel that they can dominate a social situation, females tend to assert themselves more often, make the necessary decisions when interacting with others, and argue with more enthusiasm for their point of view. Why there should be a similarity in deference patterning on the one hand and a dissimilarity in dominance patterning on the other cannot be explained within the limits of the present research.

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